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PRELIMINARY ASSESSMENT/ VISUAL SITE INSPECTION

ALCAN-TOYO AMERICA, INC.
LOCKPORT, ILLINOIS
ILD 000 716 860

FINAL REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460

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EXECUTIVE SUMMARY

Resource Applications, Inc. (RAI) performed a preliminary assessment and visual site inspection (PA/VSI) to identify and assess the existence and likelihood of releases from solid waste management units (SWMU) and other areas of concern (AOC) at the Alcan-Toyo America, Inc. (ATA) facility in Lockport, Illinois. This summary highlights the results of the PA/VSI and the potential for releases of hazardous wastes or hazardous constituents from SWMUs and AOCs identified. In addition, a completed U.S. Environmental Protection Agency (EPA) Preliminary Assessment Form (EPA Form 2070-12) is included in Attachment A to assist in prioritization of RCRA facilities for corrective action.

The ATA facility manufactures aluminum powders and pigments for use predominantly in the aerospace and automotive industries. The facility generates and manages the following waste streams: spent baghouse bags (D001), spent mineral spirits (D001), spent filter cloths (D001), cooling tower waste (D001), aluminum sludge (D001), spent acetone (F003), waste paint mixture (D001), waste oil (nonhazardous), waste grease (hazardous or nonhazardous nature undetermined), and wastewater sludge (manifested as hazardous; waste code unknown). Polychlorinated biphenyl (PCB) and asbestos waste has been generated in the past due to removal of capacitors and asbestos insulation. The facility has operated at its current location since 1966. The facility occupies 36 acres in an industrial, residential, and agricultural area and employs 95 people. The facility's regulatory status is that of a large-quantity generator and treatment, storage or disposal (TSD) facility.

From 1912 to 1960, the property was owned and operated by Northern Illinois Gas Company (NIGC), which operated a coal gasification facility. In 1966, Intercontinental Alloys (IA) purchased the property and started a secondary aluminum smelting operation. In 1976, Alcan Aluminum Corporation (Alcan) acquired a 50 percent interest in IA's operations at this plant, and in 1978 bought the remaining half. In 1980, the powders and pigments operation was started, and in 1983, the aluminum smelting operation was shut down. In 1987, a joint venture was established between Alcan and Toyo Aluminum of Japan, and since that time, the facility has been owned and operated by Alcan-Toyo America, Inc.

A closure plan was approved in 1991 for the Hazardous Waste Drum Storage Area (SWMU 1) and the Spent Mineral Spirits Tank (SWMU 2), and closure activities are currently underway. Hazardous wastes are being stored for more than 90 days in the Cooling Tower Pit Area (SWMU 3). The unit is not listed on the facility's RCRA Part A permit application, nor has the unit undergone RCRA closure.

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The PA/VSI identified the following eleven SWMUs and seven AOCs at the facility:

Solid Waste Management Units

1. Hazardous Waste Drum Storage Area
2. Spent Mineral Spirits Tank
3. Cooling Tower Pit Area
4. Flake Dryer Holding Tank
5. Spent Acetone Drum Storage Area
6. Lab Solvent Storage Tank
7. Satellite Accumulation Areas
8. Wastewater Treatment System
9. Waste Grease Storage Area
10. Former Baghouse
11. Former Benzole Building Area

Areas of Concern

1. Former Gas Holder Area
2. Area East of Building 3B
3. Former Coke Oven Area
4. Area West of Detention Pond
5. Former Tar Well Area
6. Detention Ponds and Ditches
7. Gasoline Underground Storage Tank

Releases to ground water have occurred at SWMU 11 and at AOCs 3 and 4. These occurred as a result of the former coal gasification operations, and the major contaminants are cyanides, base/neutral compounds, volatile organic compounds (VOCs), phenol, and ammonia. The potential for a release to ground water from AOCs 1, 2, and 5 is high, due to unremediated soil contamination, and the shallow depth (3 to 5 feet) of the water table. AOC 6 has a high potential for release to ground water, as runoff from the outdoor areas of the facility drains to unlined ditches, and releases of aluminum pigment were observed on the ground in several areas of the facility. AOC 7 also has a high potential for release to ground water, as the underground storage tank is approximately 14 years old, and has not been tested recently; it may be rusted and leaking. SWMUs 3 and 4 have a moderate potential for release to ground water, as releases were observed in these areas, which drain to an unlined ditch. One of the Satellite Accumulation Areas (SWMU 7) has a moderate ground water release potential due to a release to soil in the vicinity of a drum of aluminum sludge outside Building 10B; the contaminants may migrate to ground water. SWMU 10 has a nonexistent current potential for release to ground water, as the unit has been removed; its past potential is unknown, as little information was available from facility representatives regarding the unit. All other SWMUs have a low potential for release to ground water.

The potential for a release to surface water is high for SWMU 11 and AOCs 1 through 6. Contamination of soil and/or ground water has already been identified in SWMU 11 and AOCs 1 through 5, and these areas drain to unlined ditches and two detention ponds (AOC 6). The detention ponds overflow into the adjacent Des Plaines River. The potential for a release to surface water is moderate from SWMUs 3 and 4, as releases of aluminum product were observed on the ground in these areas; contaminants may have migrated to surface water via AOC 6. SWMU 10 has a nonexistent current potential for release to surface water, as the unit has been removed; its past potential is unknown, as little information was available from facility representatives regarding the unit. The potential for release to surface water is low from all other SWMUs and AOCs.

The potential for a release to air is high from SWMUs 3 and 4, as these units are exposed to air and manage volatile wastes. The potential for release to air is also high from SWMU 11, as contamination of soil and ground water with volatile constituents was identified, and AOC 6, due to the possible evaporation of released volatiles from the detention pond surface. SWMU 10 has a nonexistent current potential for release to air, as the unit has been removed; its past potential is unknown, as little information was available from facility representatives regarding the unit. All other SWMUs and AOCs exhibit a low potential for release to air, as they either do not manage or contain volatile wastes, or such wastes are managed so as to preclude a release to air.

A release to soil has occurred at SWMU 1; a small amount of aluminum powder was observed on the soil during the VSI. A release to soil was also observed at one of the Satellite Accumulation Areas (SWMU 7), adjacent to Building 10B. The potential for a release to soil is high from SWMUs 3 and 4, as releases to the asphalt lot were observed, and the area drains to unlined ditches and ultimately to one of the detention ponds (AOC 7). SWMU 10 has a nonexistent current potential for release to soil, as the unit has been removed; its past potential is unknown, as little information was available from facility representatives regarding the unit. All other SWMUs exhibit a low potential for release to soil. Releases to soil have occurred at SWMU 11 and AOCs 1 through 5; contamination with cyanides, ammonia, base/neutral compounds, phenol, and VOCs has been identified. The potential for a release to soil is high at AOCs 6 and 7. AOC 6 includes unlined ditches which manage runoff from areas of the facility where spillage of aluminum product was observed during the VSI. AOC 7 is an underground storage tank which has not been inspected recently, and may be rusted and leaking.

The facility obtains all its water from two bedrock ground water wells located on site. The nearby communities of Cresthill and Lockport obtain their water supply from bedrock ground water wells, the nearest of which is 0.5 mile southwest and downgradient of the facility. The nearest surface water body, the

Des Plaines River, is located immediately to the east of the facility property, and is used for industrial purposes. Facility access is controlled by a fence surrounding the property, and security guard patrols between 5 a.m. and 10 p.m. Outside these hours, the facility is locked to prevent access. Wetland areas bound the facility to the southeast, north, and east. Dellwood Park is located 1.2 miles north-northeast of the facility.

RAI recommends that closure activities for SWMU 1 be continued to the satisfaction of IEPA. For SWMUs 3 and 4, it is recommended that wastes be managed so as to minimize the potential for a release to the drainage ditch, and that adequate secondary containment be constructed. Additionally, if ATA wishes to maintain RCRA interim status as a storage facility, SWMU 3 should be listed on an amended Part A permit application. Otherwise, the unit should undergo formal RCRA closure. For the Satellite Accumulation Area, (SWMU 7) accumulating aluminum sludge outside Building 10B, RAI recommends soil sampling, and subsequently, appropriate remediation. If documentation is not available indicating that the ash managed in SWMU 10 is nonhazardous, soil sampling for metals is recommended. For SWMU 11, further soil and ground water sampling is recommended, with further remediation if necessary. Soil has already been excavated from this area, and is presently being stored in a pile adjacent to the site of the excavation. If this soil is determined to be hazardous, SWMU 11 may require closure, as hazardous waste will have been stored for greater than 90 days. The soil pile should be managed so as to preclude migration of contaminants into the underlying ground. No further action is recommended for all other SWMUs. For AOCs 1 through 6, soil and ground water sampling is recommended, and then, remediation as necessary. For AOC 7, tank testing is recommended, under the proper authority.

1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC) received Work Assignment No. C05087 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0006 (TES 9) to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in Region 5. Resource Applications, Inc. (RAI), TES 9 team member, provided the necessary assistance to complete the PA/VSI activities for Alcan-Toyo America, Inc. (ATA).

As part of the EPA Region 5 Environmental Priorities Initiative, the RCRA and CERCLA programs are working together to identify and address RCRA facilities that have a high priority for corrective action using applicable RCRA and CERCLA authorities. The PA/VSI is the first step in the process of prioritizing facilities for corrective action. Through the PA/VSI process, enough information is obtained to characterize a facility's actual or potential releases to the environment from solid waste management units (SWMU) and areas of concern (AOC).

A SWMU is defined as any discernible unit at a RCRA facility in which solid wastes have been placed and from which hazardous constituents might migrate, regardless of whether the unit was intended to manage solid or hazardous waste.

The SWMU definition includes the following:

- RCRA-regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells
- Closed and abandoned units
- Recycling units, wastewater treatment units, and other units that EPA has generally exempted from standards applicable to hazardous waste management units
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents. Such areas might include a wood preservative drippage area, a loading-unloading area, or an area where solvent used to wash large parts has continually dripped onto soils.

An AOC is defined as any area where a release to the environment of hazardous waste or constituents has occurred or is suspected to have occurred on a nonroutine and nonsystematic basis. This includes any area where such a release in the future is judged to be a strong possibility.

The purpose of the PA is as follows:

- Identify SWMUs and AOCs at the facility
- Obtain information on the operational history of the facility
- Obtain information on releases from any units at the facility
- Identify data gaps and other informational needs to be filled during the VSI.

The PA generally includes review of all relevant documents and files located at state offices and at the EPA Region 5 office in Chicago.

The purpose of the VSI is as follows:

- Identify SWMUs and AOCs not discovered during the PA
- Identify releases not discovered during the PA
- Provide a specific description of the environmental setting
- Provide information on release pathways and the potential for releases to each medium
- Confirm information obtained during the PA regarding operations, SWMUs, AOCs, and releases.

The VSI includes interviewing appropriate facility staff, inspecting the entire facility to identify all SWMUs and AOCs, photographing all visible SWMUs, identifying evidence of releases, initially identifying potential sampling parameters and locations, if needed, and obtaining all information necessary to complete the PA/VSI report.

This report documents the results of a PA/VSI of the ATA facility in Lockport, Illinois. The PA was completed on January 16, 1992. RAI gathered and reviewed information from the Illinois Environmental Protection Agency (IEPA) and from EPA Region 5 RCRA files. RAI also reviewed information relevant to the area of the facility from the U.S. Department of Agriculture (USDA), Federal Emergency Management Agency (FEMA), and the Illinois State Geological Survey (ISGS). The VSI was conducted on January 17, 1992. It included interviews with facility representatives and a walk-through inspection of the facility. Eleven SWMUs and seven AOCs were identified at the facility.

RAI completed EPA Form 2070-12 using information gathered during the PA/VSI. This form is included in Attachment A. The VSI is summarized and 25 inspection photographs are included in Attachment B. Field notes from the VSI are included in Attachment C. An environmental assessment by Dames and Moore (D & M) is included as Attachment D, and Attachment E is a summary of soil and ground water sampling by O'Brien and Gere Engineers, Inc. (OB & G).

2.0 FACILITY DESCRIPTION

This section describes the facility's location, past and present operations (including waste management practices), waste generating processes, history of documented releases, regulatory history, environmental setting, and receptors.

2.1 FACILITY LOCATION

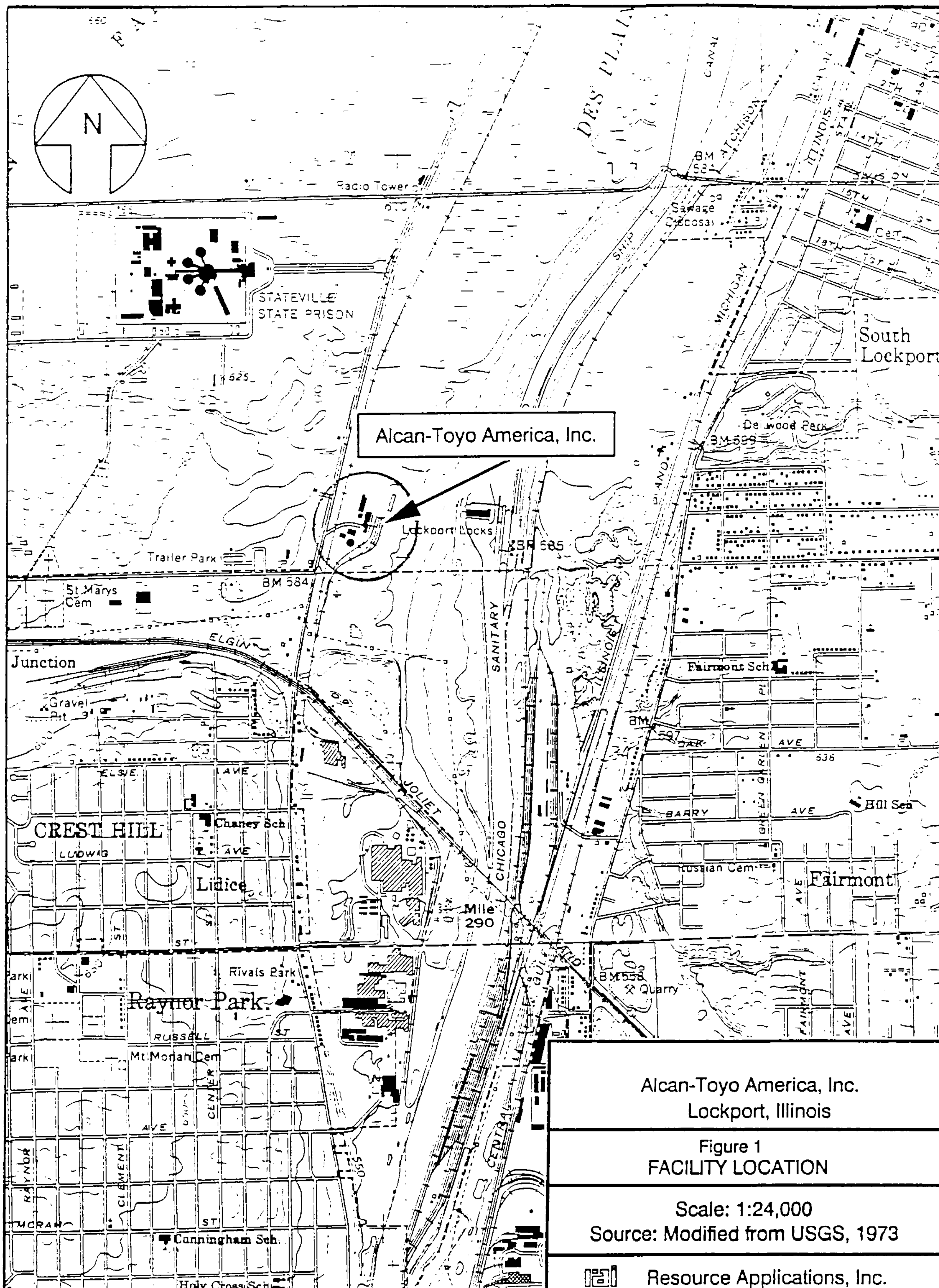
The ATA facility is located at 17401 South Broadway (Route 53), Lockport, Will County, Illinois (latitude 41°34'10" N and longitude 88°04'55" W), as shown in Figure 1. The facility occupies 36 acres in an industrial, residential, and agricultural area.

The ATA facility is bordered on the north by a wetland area owned by the Illinois Municipal Sanitary District, on the west by farmland forming part of Stateville State Prison, on the south by Cresthill Wastewater Treatment Facility, and on the east by a wetland area and the Des Plaines River.

2.2 FACILITY OPERATIONS

The ATA facility manufactures aluminum powders and pigments for use predominantly in the aerospace and automotive industries. Aluminum powder is produced by melting aluminum blocks in a reverberatory furnace fired by air and natural gas. Compressed air is fed into the molten aluminum, which is atomized into fine droplets. These droplets immediately form an aluminum oxide coating and solidify through contact with air. The powder is carried to a primary cyclone, where 90 to 95 percent of the material drops out through a control screen; this is primary grade product aluminum powder. The remaining 5 to 10 percent is introduced into a secondary cyclone, where all but 0.5 to 1 percent of the material drops out. The powder in the secondary cyclone is sent for milling. The residual amount consists of the superfine material (2 to 3 microns), and is collected in a baghouse for blending with the primary grade powder. No waste is generated from the atomizing process, as all powder is either further processed or sold as product.

Some of the powder is used in the manufacture of aluminum pigments, which are also known as pastes. The powder is introduced into a cylindrical mill containing steel balls. The unit is rotated, such that the balls impact the aluminum powder, breaking the aluminum oxide coating on the particles. The grains thus become flattened into flakes. Mineral spirits is added as a solvent, and stearic acid is added to form an aluminum stearate protective coating on the flake.



Alcan-Toyo America, Inc.
Lockport, Illinois

Figure 1
FACILITY LOCATION

Scale: 1:24,000
Source: Modified from USGS, 1973

Resource Applications, Inc.

After milling, the aluminum paste is pumped out into a filter press, which removes most of the mineral spirits from the flake mixture. The solvent is then reused in the mill, until it becomes overly contaminated with aluminum stearates (usually within 2 weeks). At this time, a waste stream of spent mineral spirits (D001) is generated. The aluminum paste collected in the filter press is removed and placed in a mixer, where it is combined with commercial product mineral spirits to produce a paste with either 65 percent or 74 percent nonvolatile content. Some customers require a dry flake (i.e. one containing less than 1 percent volatiles), and for this purpose, a vacuum dryer is used to drive off the solvent which is passed through a condenser, collected in a holding tank, and disposed of as spent mineral spirits (D001).

Commercial product solvents are stored in aboveground tanks in the tank farm. Gasoline is stored in one 8,000-gallon underground storage tank. Aluminum enters the facility as solid ingots of various sizes, which are stored adjacent to the reverberatory furnaces. Finished goods (i.e. powders and pigments) are stored in several outdoor and indoor drum storage areas in 55-gallon drums or larger containers.

The facility has operated at its current location since 1966 and employs 95 people, working in two shifts. The facility consists of 22 buildings, with a total of about 4 acres under roof.

Solid wastes are currently managed in numerous satellite accumulation areas (SWMU 7), a 6,000-gallon aboveground storage tank (SWMU 2), an indoor drum storage area (SWMU 1), two holding tanks or pits (SWMUs 3 and 4), wastewater treatment system (SWMU 8), a 500-gallon aboveground storage tank (SWMU 6), and two outdoor drum storage areas (SWMUs 5 and 9). A solvent distillation unit is currently under construction, and will be used to distill spent mineral spirits and other solvents used on site. The unit is expected to be in operation by mid-February 1992. Facility SWMUs are identified in Table 1. The facility layout, including SWMUs and AOCs, is shown in Figure 2.

Prior to 1960, the property was owned by the Northern Illinois Gas Company (NIGC) and used for the manufacture of coal gas. The plant was constructed by NIGC in 1912. In 1966, Intercontinental Alloys (IA) purchased the property, and in 1971, a secondary aluminum smelting operation was started. This involved melting scrap metal and blending it with silicon, copper, zinc, and other metal additives. In 1976, Alcan Aluminum Corporation (Alcan) acquired a 50 percent interest in IA's operations at this plant, and in 1978 bought the remaining half. A third remelting furnace was added in 1980, and in addition, the facility started to manufacture aluminum powders and pigments. In 1980, the facility

TABLE 1

SOLID WASTE MANAGEMENT UNITS (SWMU)

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit*	Status
1	Hazardous Waste Drum Storage Area	Yes	Active; undergoing RCRA closure
2	Spent Mineral Spirits Tank	Yes	Active; undergoing RCRA closure
3	Cooling Tower Pit Area	Yes	Active; managing hazardous wastes for greater than 90 days
4	Flake Dryer Holding Tank	No	Active
5	Spent Acetone Drum Storage Area	No	Active
6	Lab Solvent Storage Tank	No	Active
7	Satellite Accumulation Areas	No	Active
8	Wastewater Treatment System	No	Active
9	Waste Grease Storage Area	No	Active
10	Former Baghouse	No	Inactive; removed 1983
11	Former Benzole Building Area	Yes	Active

Note:

* A RCRA hazardous waste management unit is one that currently requires or formerly required submittal of a RCRA Part A or Part B permit application.

Alcan-Toyo America, Inc.
Lockport, Illinois

Figure 2
FACILITY LAYOUT/SWMU and AOC LOCATIONS

Scale: 1" = 180'
Source: Modified from ATA sketch received by RAI on January 17, 1992.

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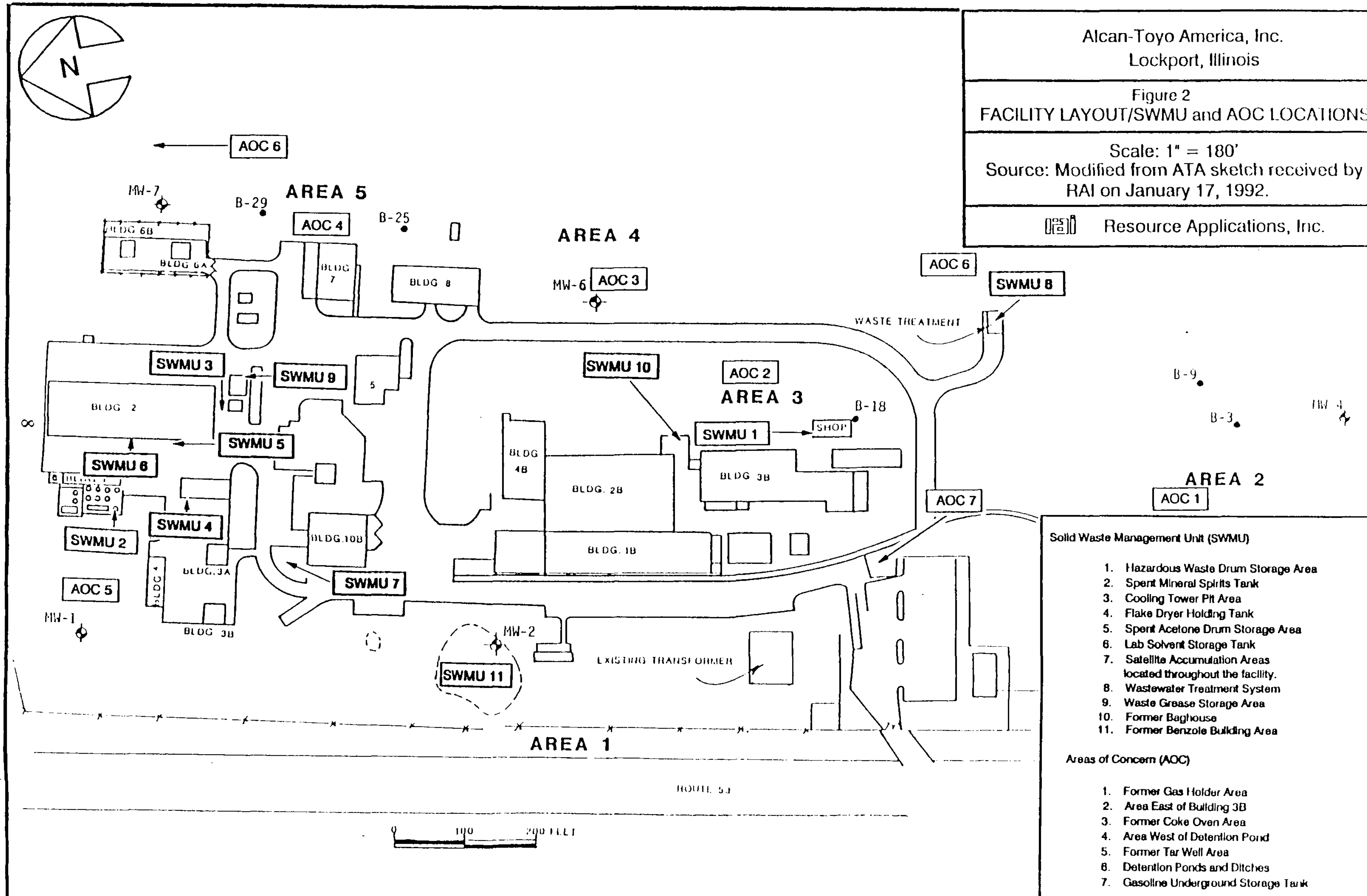

Solid Waste Management Unit (SWMU)

1. Hazardous Waste Drum Storage Area
2. Spent Mineral Spirits Tank
3. Cooling Tower Pit Area
4. Flake Dryer Holding Tank
5. Spent Acetone Drum Storage Area
6. Lab Solvent Storage Tank
7. Satellite Accumulation Areas located throughout the facility.
8. Wastewater Treatment System
9. Waste Grease Storage Area
10. Former Baghouse
11. Former Benzole Building Area

Areas of Concern (AOC)

1. Former Gas Holder Area
2. Area East of Building 3B
3. Former Coke Oven Area
4. Area West of Detention Pond
5. Former Tar Well Area
6. Detention Ponds and Ditches
7. Gasoline Underground Storage Tank

operated under the name Alcan Ingot and Powders (AIP). In 1983, the secondary aluminum smelting operation was shut down, and in 1984, following the closure of a Berkeley, California powders and pigments plant, operations were moved to Lockport. Thus, since 1983, the facility has solely manufactured powders and pigments. At some time between 1981 and 1986, the facility changed its name to Alcan Powders and Chemicals (APC). On January 1, 1986, the name was changed again to Alcan Powders and Pigments (APP). In 1987, Toyo Aluminum of Osaka, Japan approached Alcan with an interest in an aluminum pigment facility to supply Japanese car plants in the U.S. Eighty percent of the powders and pigments division was purchased by Toyo Aluminum, and the joint venture became known as Alcan-Toyo America, Inc.

2.3 WASTE GENERATING PROCESSES

The primary waste streams generated at the ATA facility are spent baghouse bags (D001), spent mineral spirits (D001), spent filter cloths (D001), cooling tower water, cooling tower waste (D001), aluminum sludge (D001), spent acetone (F003), waste paint mixture (D001), waste oil (nonhazardous), waste grease (nonhazardous or hazardous nature undetermined), process and sanitary wastewater, wastewater sludge (manifested as hazardous), Polychlorinated biphenyls (PCBs), and asbestos. These wastes are generated during the production of the aluminum powders and pigments, and in laboratory processes. Wastes generated at the facility are discussed below and are summarized in Table 2. Generation rates are based on information supplied by facility representatives during the VSI.

After a period of time, the baghouses, used to separate grades of aluminum powder subsequent to the atomizing process, become clogged with very fine (less than 1 micron) particles. The weave of the bag becomes blocked, impairing the baghouse performance, and the bags must be replaced. There are approximately 300 bags in each baghouse; these are removed, dismantled, and placed in 55-gallon drums. The drums are managed in the Hazardous Waste Drum Storage Area (SWMU 1) prior to removal from the facility for disposal. Spent baghouse bags (D001) were last removed in 1989 when 30 55-gallon drums were shipped to Pollution Control Industries of America in East Chicago, Indiana. The waste is characterized as ignitable (D001) due to the presence of mineral spirits in the aluminum powder waste.

Spent mineral spirits (D001) is generated from the ball milling process. Approximately every 2 weeks the solvent becomes contaminated with aluminum stearates and is no longer effective. At this time, it is pumped to the 6,000-gallon Spent Mineral Spirits Tank (SWMU 2). In addition, condensed mineral spirits from the vacuum flake drying process is stored in the Flake Dryer Holding Tank (SWMU 4), and subsequently pumped to SWMU 2. Spent mineral spirits from the wet-screen laboratory is

TABLE 2

SOLID WASTES

Waste/EPA Waste Code	Source	Primary Management Unit*
Spent baghouse bags/D001	Periodic bag replacement	SWMU 1
Spent mineral spirits/D001	Ball milling; vacuum drying	SWMUs 2, 4, and 6
Spent filter cloths/D001	Filter presses	SWMUs 1 and 7
Cooling tower water/unknown	Ball mill rooms	SWMU 3
Cooling tower waste/D001	Cooling tower system	SWMU 1 and 3
Aluminum sludge/D001	Mixing tank clean-out; process waste; laboratory	SWMUs 1 and 7
Spent acetone/F003	Wet-screen laboratory	SWMUs 5, 7, and formerly SWMU 2
Waste paint mixture/D001	Laboratory	SWMUs 1 and 7
Waste oil/NA**	Machinery; wastewater treatment	SWMUs 1 and 8
Waste grease/(not tested)	Machinery	SWMU 9
Process and sanitary wastewater/NA	Facility operations	SWMU 8
Wastewater sludge (manifested as hazardous)	SWMU 9	Unknown (information not available at time of writing)
PCBs/NA	Periodic capacitor removal	Removed directly off-site by contractor
Asbestos/NA	Removal in 1984-5	Removed directly off-site by contractor
Waste ash/NA	Secondary smelting furnaces	Formerly SWMU 10 (no longer generated)

TABLE 2 (continued)

SOLID WASTES

Waste/EPA Waste code	Source	Primary Management Unit*
Tar sludges+	Coal carbonization	Unknown
Clinkers, ash and coke+	Coal carbonization	Unknown
Cyanide, ammonia, and sulfur salts+	Coal carbonization	Unknown
Oil sludges+	Coal carbonization	Unknown
Contaminated liquors+	Coal carbonization; water gas process	Unknown
Sulfur removal wastes+	Water gas process	Unknown
Miscellaneous sludges+	Water gas process	Unknown
Petroleum sludges+	Water gas process	Unknown
Lamp Black+	Water gas process	Unknown
Purifier wastes+	Water gas process	Unknown
Contaminated soil/unknown	Excavation of Former Benzole Building Area	SWMU 11

Notes:

* Primary management unit refers to a SWMU that currently manages or formerly managed the waste.

** Nonapplicable (NA) designates nonhazardous waste.

+ These wastes were generated during the period 1912 to 1960, from the coal gasification operations.

pumped into the Lab Solvent Storage Tank (SWMU 6), which when full, is taken via forklift to be drained into SWMU 4. This occurs every 2 to 3 weeks. When the main tank (SWMU 2) is full, Safety-Kleen Corporation (Safety-Kleen) removes the mineral spirits by tanker, and transports it to either its Hebron, Ohio or Dolton, Illinois facilities to be used as kiln fuel. Approximately 250,000 gallons were manifested in 1990.

The filter presses, used to separate the aluminum flakes from the mineral spirits, have a cloth lining. After several weeks of use, the cloth becomes worn, and is no longer able to trap fine aluminum flakes efficiently. At this time, the spent filter cloth (D001) is removed and placed in a 55-gallon drum in one of the Satellite Accumulation Areas (SWMU 7). When the drum is full, it is moved to SWMU 1 to await pickup. There are two satellite areas accumulating this waste stream from eight filter presses on site. The last shipment of the filter cloths was to Marine Shale Processors, Inc. in Morgan City, Louisiana (Marine Shale) for incineration in its rotary kiln. Approximately 9 drums of spent filter cloths are generated annually. The spent filter cloths are manifested under the waste code D001 for the same reason as the baghouse bags.

During the ball milling procedure, the mills become very hot, and thus water is sprayed on the outer surface to keep to internal temperature below 140°F. The water is fed from the cooling tower, and drains in the areas surrounding the ball mills return the water to the tower. The returning cooling tower water commonly contains aluminum pigment that is present on the floor in the mill rooms, and this water is fed into the Cooling Tower Pit Area (SWMU 3). Here, a rope oil skimmer removes solvent and a small amount of fine aluminum that floats on the surface. The skimmer material is fed into an adjacent 55-gallon drum. Some material also settles to the bottom of the pit, and is shoveled into 55-gallon drums several times a year. This material is a hazardous waste, and is managed in the pit for more than 90 days. At this time, the cooling towers are also cleaned out, and the waste stream is known as cooling tower waste (D001). Between 250 and 300 drums of this waste are manifested each year to either Petro-Chem Processing, Inc., in Detroit, Michigan (Petro-Chem) or Eltex Chemicals and Supply in Houston, Texas (Eltex). From Eltex, wastes are sent on to Marine Shale for incineration. After the cooling tower waste has been removed, the cooling tower water is reused.

Occasionally, aluminum pigment produced in the ball milling process contains excess aluminum stearates, and is deemed to be off-specification, and therefore waste. In addition, the mixing tank used to adjust the proportion of mineral spirits to aluminum must be cleaned out when a change in pigment grade is required. These two off-specification and process wastes are accumulated in 55-gallon drums adjacent to the mixing tanks and the ball mills (SWMU 7). The combined waste stream is referred to as aluminum sludge

(D001). When full, these drums are taken to SWMU 1, and hauled off-site to either Petro-Chem or Eltex. Between 5,000 and 10,000 pounds of this waste stream are generated annually.

Spent acetone (F003) is generated the during the wet-screen laboratory process. In this laboratory, samples are dipped in an acetone bath, which is emptied periodically, generating the waste stream. The spent solvent is accumulated in a 55-gallon drum (SWMU 7), and in the past, the majority of the spent acetone has been used for general cleaning purposes around the facility. Formerly, excess spent acetone has been combined with the spent mineral spirits in SWMU 2; however, it was found that this lowered the flash point of the waste, requiring its disposal at Safety-Kleen's Dolton, Illinois facility. Three full drums of the waste have been accumulated and are being stored in the Spent Acetone Drum Storage Area (SWMU 5). ATA is discussing the possibility of disposing of the acetone as a separate waste stream through Safety-Kleen.

The laboratory (Building 10B) is used for the testing of pigments by formulation of acrylic and solvent paints and subsequent computer color matching. This waste is referred to as waste paint mixture (D001), and may contain quantities of lacquer thinner, enamel, and xylene. It is collected in 6-gallon metal containers in the lab, and transferred to a 55-gallon drum located outside the building (SWMU 7). When full, the drum is stored in SWMU 1, and three to four drums per year are sent out to Petro-Chem or Eltex. Also in the lab, a paint mixing unit under vacuum is exhausted via a rubber hose to another 55-gallon drum located outside the building. Vapor condenses and is collected in the drum; the waste also contains aluminum particles. A full drum is accumulated every 3 or 4 months, and is taken to SWMU 1 prior to hauling as part of the aluminum sludge (D001) waste stream to Petro-Chem or Eltex.

Waste oil (nonhazardous) is generated from periodic removal of spent crankcase oil from the vacuum pumps on the flake drying line. In 1991, eight 55-gallon drums were generated from this cleanout; these were stored in SWMU 1 prior to removal by Petro-Chem. Waste grease (not tested, but currently handled as nonhazardous) is generated from the gears on the ball mills. This is accumulated in a drum in an area adjacent to the building housing the milling operations (Building 2). Full drums of waste grease are also stored in this area, the Waste Grease Storage Area (SWMU 9). In the past, the grease has been dumped in the regular trash, but ATA is in the process of testing the grease to determine whether it should be disposed of as a special waste. One to two drums are generated annually.

The Wastewater Treatment System (SWMU 8) is used to manage process and sanitary wastewaters. Waste oil is skimmed from both the oil and solids separator and the flow equalizing tank. This oil is pumped to a 200-gallon storage tank within the wastewater treatment building, and removed twice yearly for recycling by Custom Blend Oil Company of Peotone, Illinois. The estimated annual rate of generation is 1,200 to 1,600 gallons. Wastewater sludge is removed from the oil and solids separator and accumulated in a 55-gallon drum. When the drum is full, it is taken to SWMU 1 prior to hauling off site. No information was available about the ultimate disposition of this waste stream. According to the City of Joliet Industrial Discharge Permit Application, the sludge is disposed of as hazardous waste (ATA, 1992). One 55-gallon drum of wastewater sludge is generated every 2 to 3 months.

PCB waste has been generated in the past through removal of old transformers and capacitors. The last such removal was in 1986, when three transformers containing PCBs were disposed of at the General Electric Company incinerator in Pittsfield, Massachusetts.

Asbestos waste was generated during the dismantling of the secondary aluminum smelting areas in 1984 and 1985. The name of the contractor used for asbestos removal was not available. According to facility representatives, no asbestos remains on site.

Waste ash (nonhazardous) was generated from the secondary aluminum smelting process prior to 1983. The waste stream was collected in the Former Baghouse (SWMU 10). Facility representatives stated the ash did not contain any hazardous constituents, although no documentation was available to support this claim. The ultimate disposition of the wastes is not known.

Prior to 1960, the plant was used for coal gasification operations. From 1912 to 1921, coal carbonization was performed, which involved cooking raw coal and/or coke in ovens or retorts to produce gas and various byproducts. Wastes included: tar sludge containing polynuclear aromatic hydrocarbons (PAH); clinkers, ash, and coke containing trace metals; cyanide, ammonia, and sulfur salts; oil sludges containing aromatics; contaminated lacquers containing tar and ammonia; sulfur removal wastes containing sulfur and cyanide; and miscellaneous acid, lime, and caustic sludges. In 1921, the water gas method was employed; steam was added to the gas as it passed through an incandescent bed of coke. Wastes from this process included: tar sludges containing heavy hydrocarbons and oil; ash and clinkers; purifier wastes consisting of spent iron oxide high in sulfur and cyanide; petroleum sludges containing oil; contaminated liquors rich in ammonia and hydrogen cyanide; and lamp black (carbon). The exact disposition of these wastes is not known, but it is thought that the majority were disposed of on site (see Section 2.4).

A pile of soil contaminated with coal tar constituents is being stored in SWMU 11, the Former Benzole Building Area. This waste was generated as a result of soil excavation subsequent to sampling conducted by D & M. IEPA has not yet made a determination on whether the soil is hazardous, and thus on a method of disposal. More detailed information is presented in Section 2.4.

2.4 HISTORY OF DOCUMENTED RELEASES

This section discusses the history of documented releases to ground water, surface water, air, and on-site soils, at the ATA facility.

Between 1912 and 1960, NIGC conducted coal gasification operations on site. In 1985, an ATA plant employee noticed a tar-like substance with a strong petrochemical odor seeping out of the ground during hot weather, in an area on the west side of the property. This was attributed to dumping of coal tar residue from the former operations, and in 1989, ATA retained D & M to conduct an environmental assessment of the facility. A copy of the preliminary draft report is included as Attachment D.

In the area described above, referred to as Area 1 in the D & M report, organic vapor analyzer (OVA) readings ranged from 2 parts per million (ppm) to greater than 1,000 ppm. Soils were observed to be oily, with a strong petrochemical odor. Twenty-five soil borings were probed in the area, and it was found that coal tar contamination extended from the ground surface to a maximum depth of 4.5 feet. A soil sample from the area showed 104.3 ppm phenol, 838 ppm ammonia, 39 ppm sulfide, 60.3 ppm volatile organic compounds (VOCs), and 49,700 ppm base/neutral compounds. A groundwater sample showed 2.6 milligrams per liter (mg/L) ammonia, 0.398 mg/L cyanide, 10 mg/L fats, oils, and greases, 11.8 mg/L phenol, 0.8 mg/L sulfide, 2,766 mg/L VOCs, and 1,144 mg/L base/neutral compounds. Levels of these constituents exceeded the Illinois General Water Standards, and levels of VOCs exceeded Illinois Baseline Fuel Cleanup Objectives. The soil was also found to exceed the regulatory level for leachable benzene, and thus exhibited the RCRA characteristic of toxicity. Remediation was performed under the direction of OB & G. A drainage system was installed to intercept ground water and prevent further contaminant migration. Soil contaminated by coal tar was excavated in 1990, and is currently piled to the north of the excavation area, covered by plastic sheeting. IEPA granted a permit for disposal of the contaminated soil at a licensed landfill in Calumet City, Illinois. However, NIGC disputed IEPA's decision to landfill the material. Currently the soil is being stored on site, pending a decision on disposal method. If the soil is determined to be hazardous by IEPA, the area managing the soil may require closure, as the waste was stored for greater than 90 days. This area is identified in this report as the Former Benzole Building Area (SWMU 11). A copy of the OB & G summary is included as Attachment E.

Area 2, near the location of former gas holders, was drilled and probed with the OVA, yielding readings ranging from 10 ppm to greater than 1,000 ppm. No ground water was encountered at this site, but several soil samples were taken. These yielded up to 25.2 ppm cyanide, 1.24 percent fats, oils and greases, 27.8 ppm ammonia, 0.63 ppm phenol, 2.4 ppm sulfide, and 245 ppm base/neutral compounds. This area is identified as the Former Gas Holder Area (AOC 1).

Area 3, east of Building 3B, showed soil contamination with 3.2 ppm cyanide, 13.6 ppm ammonia, 0.17 ppm phenol, and 9.4 ppm sulfide. No VOC or base/neutral contamination was found. This area is identified as the Area East of Building 3B (AOC 2).

Area 4, located west of the former coke oven, showed oily soils immediately above bedrock. Soil samples detected up to 34.7 ppm cyanide, 27.8 ppm ammonia, 4.75 ppm phenol, and 145 ppm sulfide. A ground water sample contained 1.55 mg/L of cyanide, about 60 times the general standard for Illinois drinking water. This area is identified at the Former Coke Oven Area (AOC 3).

Area 5, located east of Building 6A, 6B, 7, and 8, is adjacent to the northern detention pond. Levels of up to 7,030 ppm of base/neutral compounds and 23.3 ppm cyanide were found in soil samples, and a water sample contained 0.176 mg/L of cyanide, seven times the general standard for Illinois drinking water, and 6.04 mg/L ammonia, four times the general standard. This area is identified as Area West of Detention Pond (AOC 4).

D & M concluded that Areas 1, 2, and 5 were of most concern, due to high base/neutral compound concentrations. In addition, OB & G identified an area north of Building 4 and west of Building 1, which apparently exhibits similar characteristics to Area 1, and is another possible location of a former tar well. Small but detectable concentrations of ammonia, phenol, sulfide, and base/neutral compounds were found in soil samples. This area is referred to as Area D in the OB & G report, and as the Former Tar Well Area (AOC 5) in this report.

From these reports it is clear that significant releases of waste materials from the coal gasification operations occurred over an extended period of time. Soil and ground water contamination was found, and thus far, only SWMU 11 has been remediated to any extent. It should be noted that cleanup and sampling activities are being undertaken by Alcan and NIGC, as contamination occurred prior to the purchase of the property by ATA.

Two detention ponds are located on the east side of the property. These are used to manage storm water runoff from the outdoor areas of the facility. In addition, the north pond is intended to contain any releases from the tank farm. No release from the tank farm is documented, but during the VSI, aluminum powder and paste were observed on the asphalt outside several buildings and adjacent to outdoor product storage areas. It appears that material has been spilled during moving and filling of drums and containers. These releases will drain into one of the detention ponds via unlined ditches, and although the pond is clay-lined, it is designed to overflow into the adjacent Des Plaines River. The aluminum product spillage may contain mineral spirits and stearic acid, and it is possible that a release has occurred to soil (in the drainage ditches), and to surface water (in the pond and the Des Plaines River). The ponds and ditches are identified as AOC 6, the Detention Ponds and Ditches.

On June 28, 1990, representatives of IEPA and the U.S. Army Corps of Engineers conducted an investigation into an apparent wetland violation. Asphalt and construction debris had been dumped in a wetland area in the southeast corner of the facility. As a result, an Administrative Warning Notice was issued on August 1, 1990. ATA removed 600 cubic yards of the dumped material, graded the area adjacent to the wetland to a gradual slope, and re-seeded the land. On August 28, 1990, a follow-up inspection determined that all apparent violations had been resolved (IEPA, 1990c).

2.5 REGULATORY HISTORY

On August 14, 1980, Alcan Ingot and Powders (AIP) filed a notification of hazardous waste activity for the generation and treatment, storage, and disposal of hazardous wastes (AIP, 1980a). AIP filed a Part A permit application on October 10, 1980 for the management of D001 and D003 wastes in a 42,500-gallon container storage area (SO1) and 6,000-gallon capacity storage tank (S02) (AIP, 1980b). This facility submitted a revised Part A permit application on November 21, 1985 (APC, 1985). The purpose was to inform EPA about a reduction of S01 capacity from 42,500 gallons to 14,080 gallons and also to inform EPA of an upcoming name change to Alcan Powders and Pigments (APP). The original S01 process code application referred to an outdoor storage area that was never used; the S01 code on the 1985 revision referred to the Hazardous Waste Drum Storage Area (SWMU 1). On both applications, the S02 code referred to the Spent Mineral Spirits Tank (SWMU 2). The Cooling Tower Pit Area (SWMU 3) was not addressed as a surface impoundment (S04) in the applications.

D & M submitted a closure plan to IEPA (on behalf of ATA) on August 8, 1991, for SWMUs 1 and 2 (D & M, 1991). The closure plan did not address the 42,500 capacity container storage area (S01) originally placed on the 1980 Part A permit application. A December 13, 1985 written correspondence from

Edith Ardiente, EPA to Richard Kray of APC, stated that the 42,500 capacity S01 must go through closure (EPA, 1985). During the VSI, facility representatives stated that the original container storage area was never used; therefore, the facility was not filing a closure plan for that particular unit. A copy of a letter certifying that the unit was never used was provided to RAI by ATA (APP, 1986). IEPA approved the closure plan on November 4, 1991 and stated that closure must be completed by May 15, 1992 (IEPA, 1991). ATA is still regulated as a generator and treatment, storage, and disposal facility.

Several paperwork violations concerning the facility's contingency plan, training records, and waste analysis procedures were discovered during RCRA inspections conducted by IEPA (IEPA, 1981, 1988). No orders were issued for the above mentioned inspections. A June 28, 1990 IEPA inspection discovered that the facility was illegally dumping construction fill material to an adjacent wetland area (IEPA, 1990a). An Administrative Warning Notice was issued on August 1, 1990, outlining the necessary corrective action measures (IEPA, 1990b). A subsequent August 28, 1990 follow up inspection by IEPA confirmed that the issue had been resolved (IEPA, 1990c).

ATA has ten operating permits for various production processes, all pertaining to air pollution control equipment. All permits are current and no violations have been noted. However, a December 1985 IEPA inspection discovered the facility was operating an 8,000-gallon gasoline tank without a permit (IEPA, 1986). A permit was issued for the tank on December 18, 1990.

The facility has applied for an air permit to operate a solvent still (ATA, 1991). The permit is currently under review by IEPA. There is no history of odor complaints from neighboring residences or facilities.

In 1980, the facility filed an application for a National Pollutant Discharge Elimination System (NPDES) permit to discharge treated process wastewater to the Des Plaines River. The permit was duly issued, but in 1987, the facility began discharging the treated process wastewater to the City of Joliet Municipal Utilities; consequently, a NPDES permit was no longer required. There have been no documented violations of the NPDES permit (IEPA, 1987). ATA currently has a City of Joliet Industrial Wastewater Discharge Permit.

2.6 ENVIRONMENTAL SETTING

This section describes the climate, flood plain and surface water, geology and soils, and ground water in the vicinity of the ATA facility.

2.6.1 Climate

The climate in Will County is typically continental, with cold winters, warm summers and frequent short-period fluctuations in temperature, humidity, cloudiness, and wind direction. The average daily temperature is 48.7°F. The lowest average daily temperature is 11.3°F in January. The highest average daily temperature is 84.2°F in July.

The total annual precipitation for the county is 35.62 inches (Ruffner and Bair, 1985). The mean annual lake evaporation for the area is about 30 inches (USDC, 1968). The 1-year, 24-hour maximum rainfall is 10.48 inches (Ruffner and Bair, 1978).

The prevailing wind is from the west. Average wind speed is highest in March at 11.8 miles per hour from the west. The average annual wind speed is 10.3 miles per hour (Ruffner, 1978).

2.6.2 Flood Plain and Surface Water

The ATA facility is located outside the 500-year flood plain, in an area of minimal flooding (FEMA, 1982). *The nearest surface water body, the Des Plaines River, is located immediately to the east of the* facility, approximately 300 yards from the nearest building. The river is used for industrial purposes. This surface water body discharges to the Illinois River and, ultimately, the Mississippi River.

Surface water drainage at the facility is directed via ditches into the detention ponds, which overflow to the Des Plaines River. This storm water discharge is not under an NPDES permit. Areas of wetland are located immediately southeast, north, and east of the facility.

2.6.3 Geology and Soils

The facility is underlain by soils of the Made Land unit. These are where the original soils have been disrupted by cutting and filling during construction activities (USDA, 1988). Boring for soil and water samples revealed that most of the drift, or unconsolidated deposits, underlying the facility are dark brown sandy clays and sandy gravels. Thickness of drift varied between 2 feet and 14 feet, except for one location, where hard clay existed to a depth of 25 feet. Some of these unconsolidated deposits are construction fill materials. The drift deposits in this area are due to the Pleistocene glaciation, and consist of a mixture of unsorted till, clay, sand, gravel, and peat (Willman, 1971).

The uppermost bedrock beneath the facility is Silurian dolomite of the Niagaran-Alexandrian series. These rocks are predominantly dolomites, with some cherty and sandy layers. The Silurian rocks lie unconformable on the Upper Ordovician Maquoketa Shale, the Galena-Platteville dolomite, and the Glenwood-St. Peter medium- and fine-grained sandstones (Willman, 1971).

The Cambrian system rock is marine in origin. Its lower half is largely sandstone and the upper half consists of dolomites, sandy dolomites, sandstones, and siltstones. Sandstones of the Eau Claire Formation, which dominate in the vicinity of the site, are 370 to 470 feet thick (Willman, 1971). The Eau Claire Formation is composed of a variety of rock types including sandstones, siltstones, dolomite, and shale in the upper and middle part. The lower part is composed of rock similar to Mt. Simon Sandstone, which is present throughout the area (Hughes, et al., 1966). The base is the top of Precambrian crystalline rock (Hughes, et al., 1966). The depth of crystalline rock ranges from 3,750 feet to 4,250 feet around the facility.

2.6.4 Ground Water

In the vicinity of the site, ground water is obtained from four major water-yielding units called aquifers: (1) sand and gravel beds in the glacial drift; (2) shallow dolomite aquifers, mainly the Silurian Dolomite; (3) the Cambrian-Ordovician aquifer, in which the Ironton-Galesville and Glenwood St. Peter Sandstones are the most productive units; and, (4) the Mt. Simon aquifer, which consists of the Mt. Simon Sandstone and the basal sandstone of the Eau Claire Formation (Willman, 1971).

In the Des Plaines River plain the dolomite lies at or near the surface, so water-yielding sands and gravels are scarce. Elsewhere in Will County, ground water supplies are obtainable from rock 50 feet to 150 feet deep in sand and gravel within the glacial drift. The best possibilities for high capacity wells in sand and gravel are where the drift is generally over 100 feet thick (Bergstrom, et al., 1955). Some wells penetrate through the drift and obtain water from open cracks and crevices in the dolomite. Beneath the site, ground water was found to be 3 to 5 feet below ground surface, although in some cases, ground water was not encountered during drilling (see Attachment D). In the vicinity of the site, ground water flows east-southeast, towards the Des Plaines River.

The shallow bedrock aquifer system yields water through fractures and solution openings and is recharged from precipitation. Shallow wells have the advantage of rapid recharge but their limitations include erratic yield because of irregular permeability and susceptibility to contamination (Hughes, et al., 1966).

The deep bedrock aquifer systems include the Cambrian-Ordovician system and the Mt. Simon system. The major aquifers are the Glenwood-St. Peter, Ironton-Galesville, and Mt. Simon Sandstones. The top of the Cambrian-Ordovician aquifer system is at the top of or within the Galena-Platteville dolomites. The Cambrian-Ordovician and the Mt. Simon aquifers are separated by relatively impermeable shales and dolomites of the upper and middle part of the Eau Claire Formation and are included with the Mt. Simon Sandstone as the Mt. Simon aquifer system.

The wells in the deep bedrock aquifer system yield in excess of 700 gallons per minute (gpm) and are dependable for large supplies of water. The Galena-Platteville Dolomite contributes little water because of slow permeability. The Glenwood-St. Peter Sandstone, beneath the Galena-Platteville Dolomite, is widely utilized where water requirements are less than 200 gpm. It has a permeability of approximately 9 to 15 gpd/sq. ft. while the underlying Ironton-Galesville Sandstone has a permeability of about 35 gpd/sq. ft. The Mt. Simon aquifer system lies at approximately 1,650 feet below the surface and about 270 feet of fresh water-bearing sandstone can be expected. The Mt. Simon system has an average permeability of approximately 16 gpd/sq. ft. Water wells rarely penetrate more than a few hundred feet into this system because the water is too highly mineralized for most uses (Hughes, et al., 1966).

2.7 RECEPTORS

The ATA facility occupies 36 acres in an industrial, residential, and agricultural area in Lockport, Illinois. Lockport has a population of about 9,000.

The ATA facility is bordered on the north by a wetland area owned by the Illinois Municipal Sanitary District, on the west by farmland forming part of Stateville State Prison, on the south by Cresthill Wastewater Treatment Facility, and on the east by a wetland area and the Des Plaines River. The nearest school, Chaney School, is located about 0.8 mile south-southwest of the facility. Facility access is controlled by a fence surrounding the property, and security guard patrols between 5 a.m. and 10 p.m. Outside these hours, the facility is locked to prevent access.

The nearest surface water body, the Des Plaines River, is located immediately to the east of the facility property, and is used for industrial purposes. Other surface water bodies in the area include the Chicago Sanitary and Ship Canal, located immediately to the east of the Des Plaines River, and the Illinois and Michigan Canal, located 0.7 miles east of the facility.

Ground water is used for all water supplies at the facility. The nearest drinking and industrial water wells are located on site. Two wells are completed in bedrock; one is 700 feet deep, the other is 1,400 feet deep. The community of Crest Hill receives its water supply from a number of shallow bedrock ground water wells, the nearest of which is located at Oakland Street and Chaney Avenue, approximately 0.5 mile southwest and upgradient of the facility. This well is 150 feet deep (CWD, 1992). The wells serving the city of Lockport are located approximately 3 miles northeast of ATA, on the opposite side of the Chicago Sanitary and Ship Canal and the Des Plaines River. These wells are 1,500 feet deep, and draw from 1,000 feet (LWD, 1992).

Sensitive environments are located adjacent to the facility. Wetland areas bound the facility to the southeast, north, and east, and the Des Plaines River is located 300 yards east of the nearest facility building. Dellwood Park is located 1.2 miles north-northeast of the facility.

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the eleven SWMUs identified during the PA/VSI. The following information is presented for each SWMU: description of the unit, dates of operation, wastes managed, release controls, history of documented releases, and RAI observations.

SWMU 1	**Hazardous Waste Drum Storage Area**
Unit Description:	The Hazardous Waste Drum Storage Area is located east of Building 3, in the vicinity of AOC 2. This unit consists of a 64-foot by 16-foot brick building and the surrounding gravel and exposed soil area. It is used to store 55-gallon drums of hazardous wastes prior to removal from the facility. The northern half of the building is concrete floor, and the southern half is bare soil. The north and south ends of the building are open, and there is a 6-inch high concrete berm on the floor at either end. There are no floor drains in the area (see Photograph No. 1). This unit was first listed on the 1985 amended RCRA Part A permit application. However, according to facility representatives, the unit has been used for greater than 90-day storage of hazardous wastes since 1980.
Date of Startup:	This unit began operation in 1980.
Date of Closure:	This unit is active. It is currently undergoing RCRA closure, and will be used as a less than 90-day storage area after closure is approved.
Wastes Managed:	This unit manages spent baghouse bags (D001), spent filter cloths (D001), cooling tower waste (D001), aluminum sludge (D001), waste paint mixture (D001), and waste oil (nonhazardous).
Release Controls:	Part of the building has sound concrete flooring, and there are concrete berms located at each end and halfway through the building. Drums are stored on wooden pallets.

History of Documented Releases:	No releases from this unit have been documented, other than a small amount of aluminum powder observed on the ground during the VSI (see below).
Observations:	The unit contained approximately 55 drums during the VSI. All the drums were sealed, and in good condition. Some aluminum dust was observed on the dirt floor at the south end of the building. Drums were stacked as many as three high, with pallets between each layer.
SWMU 2	**Spent Mineral Spirits Tank**
Unit Description:	The Spent Mineral Spirits Tank is located outdoors, in the tank farm west of Building 1. The unit is used to store spent mineral spirits from various processes. The aboveground tank has a capacity of 6,000 gallons, and is constructed of carbon steel. The tank farm is situated within a bermed concrete containment area with a capacity of 12,000 gallons (the volume of the largest tank in the farm). The tank farm contains eight tanks, seven of which either store commercial product or are process tanks. The total tank capacity is 42,000 gallons. There are no floor drains in the area. The tank is insulated, and an internal steam coil ensures that the waste remains in a liquid state during the winter (see Photograph No. 2).
Date of Startup:	This unit began operation in 1980.
Date of Closure:	This unit is active. It is currently undergoing RCRA closure, and will be used for less than 90-day storage after closure is approved.
Wastes Managed:	This unit manages spent mineral spirits (D001). In the past, spent acetone (F003) has been managed in the tank along with the mineral spirits. Wastes from this unit are ultimately hauled off site by Safety-Kleen.
Release Controls:	The unit is constructed of carbon steel, and is located within a concrete containment structure. There are no floor drains in the area.

History of Documented Releases:	No releases from this unit have been documented.
Observations:	The unit and containment were in good condition at the time of the VSI. No evidence of release was noted.
SWMU 3	**Cooling Tower Pit Area**
Unit Description:	The Cooling Tower Pit Area is located outdoors, just south of Building 2. The unit consists of the pit itself, a rope oil skimming device, and a 55-gallon drum used for accumulation of waste. The pit itself is concrete and below grade, with a capacity of 400 gallons. Water returning to the cooling tower via drains is fed into the pit (see Photograph No. 3). A rope-type skimming device removes spent solvent and fine aluminum particles from the surface of the water, and it is fed into a 55-gallon drum (see Photograph No. 4). Periodically, material is also shovelled from the bottom of the pit. The waste stream is known as cooling tower waste (D001). The waste is managed in the unit for more than 90 days, but the unit is not regulated as a surface impoundment, and is not listed on the Part A permit application. The area surrounding the unit drains to an unlined ditch and ultimately to one to the Detention Ponds (AOC 6).
Date of Startup:	This unit began operation in 1980.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages cooling tower water containing an unknown and varying quantity of aluminum pigment. The cooling tower waste (D001) is ultimately managed in SWMU 1, and then removed by Petro-Chem or Eltex.
Release Controls:	The pit is constructed of sound concrete. The accumulation drum is located on an asphalt surface.

History of Documented Releases:	No releases from this unit have been documented. However, evidence of releases was observed during the VSI (see below).
Observations:	The asphalt area around the pit and drum was covered with aluminum waste, probably containing mineral spirits. This waste would appear to be due to spillage from the skimming system and the 55-gallon drum.
SWMU 4	**Flake Dryer Holding Tank**
Unit Description:	The Flake Dryer Holding Tank is located outdoors, partially below grade, on the west side of a small unnamed building situated between Building 2 and Building 3A. This unit is used to manage condensed mineral spirits solvent from the flake drying process. Solvent is introduced from process into the 300-gallon steel tank via a rubber hose (see Photograph No. 5). The asphalt area surrounding the unit drains to the north detention pond.
Date of Startup:	This unit began operation in 1980.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages spent mineral spirits (D001). Wastes from this unit are ultimately pumped into SWMU 2 prior to hauling by Safety-Kleen.
Release Controls:	The tank is constructed of steel, sunken partially beneath an asphalt area. The outdoor area drains to one of the Detention Ponds (AOC 6).
History of Documented Releases:	No releases from this unit have been documented, but a release was observed during the VSI, as documented below.
Observations:	The ground surrounding the unit was covered with aluminum waste, which contains mineral spirits. This area drains to one of the Detention Ponds (AOC 6).

SWMU 5	**Spent Acetone Drum Storage Area**
Unit Description:	The Spent Acetone Drum Storage Area is located outdoors, on the west side of Building 2. The unit is used for storage of spent acetone in 55-gallon drums. The solvent is used in the wet-screen laboratory. Drums are stored on a wooden pallet on an asphalt lot (see Photograph No. 6). The outdoor area drains via an unlined ditch into the north detention pond (AOC 6).
Date of Startup:	This unit began operation in 1980.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages spent acetone (F003). In the past, spent acetone was used for maintenance purposes, and some has been disposed of in SWMU 2. ATA is currently discussing possible removal of this waste stream by Safety-Kleen.
Release Controls:	Drums are stored on a wooden pallet on a sound asphalt lot. Any release would drain to the north detention pond.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The unit contained 3 drums labelled "Used Acetone" at the time of the VSI. Wastes appeared to be well managed, and the drums were in good condition. No evidence of release was noted.
SWMU 6	**Lab Solvent Storage Tank**
Unit Description:	The Lab Solvent Storage Tank is located outdoors, on the west side of Building 2, immediately north of SWMU 6. This unit houses a 500-gallon steel tank which manages spent mineral spirits from the wet-screen laboratory. Solvent is pumped into the tank via a rubber hose from the laboratory, which is located on the second floor of Building 2. Every 2 to 3

	weeks, the unit is transported by forklift to the Flake Dryer Holding Tank (SWMU 4), where it is emptied. The unit is located on an asphalt lot, which drains to the north detention pond (see Photograph No. 7).
Date of Startup:	This unit began operation in 1980.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages spent mineral spirits (D001). Wastes from this unit are ultimately managed in SWMU 4, and then SWMU 2 prior to removal from the facility by Safety-Kleen.
Release Controls:	There are no release controls, other than that the unit is located on a sound asphalt floor.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The wall of Building 2 was splashed with what appeared to be aluminum pigment. It is not known whether this was due to a release from the hose leading to the tank. Other than this, the area surrounding the tank appeared clean.
SWMU 7	**Satellite Accumulation Areas**
Unit Description:	The Satellite Accumulation Areas are located throughout the facility, and consist of areas housing 55-gallon drums accumulating hazardous wastes at the point of generation. These areas are located in the laboratory (Building 10B), the filter press areas, the ball mill areas, the pigment mixing tanks, the solvent unloading area, and the wet-screen laboratory. The areas are located both indoors and outdoors, either on a concrete floor or on an asphalt lot (see Photographs No. 8 through 12). The laboratory satellite consists of a 6-gallon steel container (see Photograph No. 9) which, when full, is emptied into a 55-gallon drum just outside the laboratory

building (see Photograph No. 10). There are no floor drains in the vicinity of the areas.

Date of Startup:	This unit began operation in 1980.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages spent filter cloths (D001), aluminum sludge (D001), waste paint mixture (D001), and spent acetone (F003). Wastes from this unit are ultimately managed in SWMU 1 prior to removal from the facility.
Release Controls:	The drums are stored on sound concrete or asphalt.
History of Documented Releases:	No releases from this unit have been documented. However, evidence of some minor releases was observed during the VSI (see below).
Observations:	A release was observed in the vicinity of the drum accumulating aluminum sludge (D001) outside Building 10B (see Photograph No. 11). No evidence of release was noted in the other areas.
SWMU 8	**Wastewater Treatment System**
Unit Description:	This unit is located in the southeast portion of the facility property. It consists of a building housing the treatment system, a surge tank located outdoors, and a holding basin east of the building. The unit is used for treatment of process and sanitary wastewaters from the facility. Water is pumped via lift stations into a surge tank, from which it is pumped periodically into the Edens oil and solids separator within the building (see Photograph No. 13). Here, oil is removed using a rope-type oil skimmer, and pumped to a 200-gallon storage tank. Wastewater sludge is removed and collected in 55-gallon drums; no information is currently available on the disposition of these drums. The treated effluent is pumped to a flow equalizing tank (see Photograph No. 14), where compressed air is bubbled through the water, and an oil skimmer unit removes additional surface oil.

Oil removed at this stage is pumped into two 30-gallon steel drums, from where it is pumped into the aforementioned storage tank. Wastewater is automatically, pumped to the City of Joliet sewer. The pH of the effluent is monitored continuously, and is manually adjusted using sulfuric acid. In addition, the water is sampled every 2 weeks, and results are reported to the City of Joliet. At certain times, the city treatment works temporarily lacks the capacity to handle wastewater from ATA, and in these cases, discharge to the city sewer is postponed. The treated wastewater is diverted into a clay-lined holding basin located outside (see Photograph No. 15). Compressed air is continually bubbled through the water in the basin, and when discharge to the sewer is again permitted, the water is returned by gravity to the flow equalizing tank, and subsequently discharged. The Edens separator and flow equalizing tank are constructed of steel, and located indoors on a concrete floor. The surge tank is located below grade, and is constructed of concrete. The holding basin is located outdoors, and is clay-lined. There are no drains located in the area.

Date of Startup: This unit began operation in 1981.

Date of Closure: This unit is active.

Wastes Managed: This unit manages both process and sanitary wastewater (nonhazardous). As a result of pretreatment, waste oil (nonhazardous) and wastewater sludge (manifested as hazardous) are also generated. Waste oil is hauled off site for recycling, and the wastewater is ultimately discharged to the City of Joliet sewer. The disposition or storage of the sludge is not known at this time, other than that it is hauled off site for disposal.

Release Controls: The oil and solids separator, the waste oil tank, and the flow equalizing tank are located indoors on a concrete floor, and are constructed of steel. The storage tank is constructed of sound concrete, and the holding basin is clay-lined.

History of Documented Releases: No releases from this unit have been documented.

Observations:	The unit was in good condition at the time of the VSI. Evidence of minor oil releases was observed on the concrete floor inside the building. Otherwise, wastes appeared to be well-managed.
SWMU 9	**Waste Grease Storage Area**
Unit Description:	The Waste Grease Storage Area is located south of Building 2, adjacent to the Cooling Tower Pit Area (SWMU 3). The unit contains a wooden pallet, on which drums of waste grease are stored. The waste grease is derived from the gears on the ball mills; it is accumulated in one drum, and other drums full of grease are stored on the pallet (see Photograph No. 16). The unit is situated outdoors, on an asphalt lot. There are floor drains in this outdoor area, which discharge to the north detention pond.
Date of Startup:	This unit began operation in 1980.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages waste grease (no analysis has been made to determine the hazardous or nonhazardous nature of the waste). Wastes from this unit are ultimately be hauled off site for disposal.
Release Controls:	The drums are stored on pallets, on a sound asphalt lot.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The unit contained three drums on pallets, and was in good condition at the time of the VSI. No evidence of release was noted.
SWMU 10	**Former Baghouse**
Unit Description:	The Former Baghouse is located immediately southeast of Building 2B. Prior to 1983, the area contained a baghouse which was used to manage nonhazardous ash from the secondary aluminum smelting operations.

	Information on materials of construction or size of the baghouse were unavailable.
Date of Startup:	This unit began operation in 1964.
Date of Closure:	The baghouse was removed in 1983.
Wastes Managed:	This unit managed waste ash (nonhazardous). Facility representatives indicated that the waste was nonhazardous, but no analyses of the ash were available. The ultimate disposition of the waste is unknown.
Release Controls:	Information was not available on release controls for this unit.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The unit consisted of a snow-covered asphalt area at the time of the VSI, as all the equipment from the old smelting operations has been removed (see Photograph No. 17). Some empty drums were present in the area. No evidence of release was noted.
SWMU 11	**Former Benzole Building Area**
Unit Description:	This area is located on the west side of the property, northwest of Building 1B. It is thought to be the former location of a tar well, where coal tar residue was dumped during coal gasification operations when NIGC owned the facility from 1912 to 1960. In 1989, D & M conducted soil and ground water sampling in the area; the results are included in Attachment D, and summarized in Section 2.4. Significant soil contamination with phenol, ammonia, VOCs and base/neutral compounds was discovered, and as a result, a large quantity of soil was excavated under the direction of OB & G. The area from which the soil was excavated is illustrated in Photograph No. 18; it has since been backfilled with clean soil. A permit was granted to dispose of the soil at a landfill in Calumet City, Illinois; however NIGC disputed the disposal method, and the soil is currently being stored

immediately to the north of the excavated area under plastic sheeting (see Photograph No. 19). The soil may be hazardous due to benzene content, and if this is the case, the area in which the soil is piled has stored hazardous waste for greater than 90 days and may require closure. The area is identified as a SWMU because the unit is managing the excavated soil. No further testing of soil or ground water has been performed since remediation, and the cleanup has not yet been approved by IEPA. The area measures approximately 150 feet by 120 feet.

Date of Startup: This unit began operation in 1990, when soil was excavated and piled in the area.

Date of Closure: This unit is active.

Wastes Managed: This unit manages a pile of soil contaminated with VOCs, phenol, ammonia, and base/neutral compounds.

Release Controls: The soil pile is covered with plastic sheeting. There is no sheeting beneath the pile; the soil is directly on the ground.

History of Documented Releases: Soil and ground water sampling have identified significant contamination of both media with a number of substances (see Section 2.4).

Observations: The area is covered with patches of grass. The soil pile is resting directly on the ground, and contaminants could leach back into the soil.

4.0 AREAS OF CONCERN

RAI identified seven AOCs during the PA/VSI. These AOCs are discussed below; their locations are shown in Figure 2.

AOC 1 **Former Gas Holder Area**

This area is located at the south end of the facility, and formerly housed a holder for gas product. Elevated levels of cyanide, ammonia, and base/neutral compounds were found in soil in this area. The area is of concern because no remediation has yet taken place. An area as large as 400 feet by 400 feet may be contaminated, although sampling was concentrated at the south end.

AOC 2 **Area East of Building 3B**

This area is located east of Building 3B, and measures approximately 300 feet by 100 feet (see Photograph No. 20). It includes the Hazardous Waste Drum Storage Area (SWMU 1). Soil contamination with cyanide, ammonia, and sulfide was found in samples taken by D & M. The area is identified as an AOC because no remediation has yet been performed in the area.

AOC 3 **Former Coke Oven Area**

This area is approximately 120 feet south of Building 8, and formerly housed a coke oven for coal gasification. D & M found soils in the area to contain elevated levels of cyanide, ammonia, phenol, and sulfide. A ground water sample exceeded Illinois drinking water standards for cyanide. This area is an AOC because no remediation has yet occurred. The dimensions of the area are approximately 160 feet by 70 feet.

AOC 4 **Area West of Detention Pond**

This area is located between the northern detention pond and Buildings 6A, 6B, 7, and 8. Soils were found to contain very high levels of base/neutral compounds and cyanide, and a water sample contained ammonia and cyanide in excess of Illinois drinking water standards. The area measures approximately 500 feet by 70 feet; it is not known what was located there in the past. The area is an AOC because soil and ground water contamination has occurred, and no remediation has taken place as yet.

AOC 5 Former Tar Well Area

OB & G identified an area north of Building 4 and west of Building 1, which exhibited similar characteristics to SWMU 11. Apparently small concentrations of base/neutral compounds, ammonia, phenol, and sulfide were found in soil samples, and a strong petrochemical odor was present. This 145-foot by 70-foot area is identified as an AOC because no remediation has yet been performed.

AOC 6 Detention Ponds and Ditches

These ponds are located on the eastern side of the property. The north pond (just east of AOC 4) is used as secondary containment for a tank farm release, and for storm water drainage. Runoff from the area outside the buildings in the northern half of the property is directed into an unlined ditch (see Photograph No. 21) which flows to the clay-lined detention pond (see Photograph No. 22). Runoff from the southern half of the property is directed into a similar clay-lined pond toward the southeast corner of the property (see Photograph No. 23). This south pond is used as a source of fire-fighting water for the facility. Runoff from most outdoor areas of the facility is directed to the ditches via floor drains (see Photograph No. 24). The area is identified as an AOC because there are several areas adjacent to buildings where aluminum powder and pigment have been spilled. These areas drain via the unlined ditch to the detention ponds; thus there is a possibility that aluminum and solvent have contaminated soil in the ditches. In addition, the ponds are designed to overflow into the adjacent Des Plaines River; thus a release to surface water may have occurred.

AOC 7 Gasoline Underground Storage Tank

One 8,000-gallon carbon steel underground storage tank (UST) is located in the southwest portion of the facility, just south of the entrance gate (see Photograph No. 25). It is used to store product gasoline. A vapor retention device has recently been installed, but no secondary containment exists. The UST is identified as an area of concern because it is old (installed in 1978) and has not been tested recently; it may be rusted and leaking.

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5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified 11 SWMUs and seven AOCs at the ATA facility. Background information on the facility's location, operations, waste generating processes, history of documented releases, regulatory history, environmental setting, and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, history of documented releases, and observed condition, is presented in Section 3.0. AOCs are discussed in Section 4.0. Following are RAI's conclusions and recommendations for each SWMU and AOC. Table 3 summarizes the SWMUs and AOCs at the ATA facility and recommended further actions.

SWMU 1 **Hazardous Waste Drum Storage Area**

Conclusions: This unit is used to store 55-gallon drums of hazardous waste prior to removal from the facility. It is currently undergoing RCRA closure. The potential for release to environmental media is detailed below:

Ground Water: Low. Drums are stored indoors on pallets and/or on the concrete floor.

Surface Water: Low. Drums are stored indoors, and there is no pathway to surface water.

Air: Low. Drums are stored closed.

On-Site Soils: A small release of aluminum pigment was observed during the VSI, on the bare soil within the building. The closure plan includes soil sampling to determine if contamination has occurred.

Recommendations: RAI recommends that ATA continue closure activities to the satisfaction of IEPA.

SWMU 2 **Spent Mineral Spirits Tank**

Conclusions: This is a 6,000-gallon carbon steel tank used to accumulate spent mineral spirits prior to off-site recycling. It is currently undergoing RCRA closure. The unit has a low potential for release to ground water, surface water, air, and on-site soils, as the tank is located within sound secondary containment.

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TABLE 3

SWMU AND AOC SUMMARY

SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
1. Hazardous Waste Drum Storage Area	1980 to present	Small amount of aluminum powder on ground during VSI.	Continue closure activities to satisfaction of IEPA.
2. Spent Mineral Spirits Tank	1980 to present	None	None
3. Cooling Tower Pit Area	1980 to present	Aluminum waste on asphalt ground during VSI.	Either amend Part A permit application or formally RCRA close the unit. Manage wastes to minimize potential for release to drainage ditch. Install adequate secondary containment.
4. Flake Dryer Holding Tank	1980 to present	Aluminum waste on asphalt ground during VSI.	Manage wastes to minimize potential for release to drainage ditch. Install adequate secondary containment.
5. Spent Acetone Drum Storage Area	1980 to present	None	None
6. Lab Solvent Storage Tank	1980 to present	None	None
7. Satellite Accumulation Areas	1980 to present	Solvent on ground outside Building 10B and by drums in filter press area.	Sample soil around Building 10B accumulation area, and remediate as appropriate.
8. Wastewater Treatment System	1981 to present	None	None
9. Waste Grease Storage Area	1980 to present	None	None

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TABLE 3 (Continued)

SWMU AND AOC SUMMARY

SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
10. Former Baghouse	1964 to 1983	None	If the facility cannot provide documentation that the ash was nonhazardous, conduct soil sampling.
11. Former Benzole Building Area	Unknown to present	Soil and ground water contamination identified.	Conduct further soil and ground water sampling in excavated area, and remediate further if necessary. If excavated soil is determined to be hazardous, area may require closure. Manage soil pile to preclude migration of contaminants.

AOC	Dates of Operation	Evidence of Release	Recommended Further Action
1. Former Gas Holder Area	Unknown to present	Soil contamination identified.	Conduct further soil and ground water sampling, and remediate as necessary.
2. Area East of Building 3B	Unknown to present	Soil contamination identified.	Conduct further soil and ground water sampling, and remediate as necessary.
3. Former Coke Oven Area	Unknown to present	Soil contamination identified.	Conduct further soil and ground water sampling, and remediate as necessary.
4. Area West of Detention Pond	Unknown to present	Soil and ground water contamination identified.	Conduct further soil and ground water sampling, and remediate as necessary.
5. Former Tar Well Area	Unknown to present	Soil contamination identified.	Conduct further soil and ground water sampling, and remediate as necessary.

TABLE 3 (Continued)

SWMU AND AOC SUMMARY

AOC	Dates of Operation	Evidence of Release	Recommended Further Action
6. Detention Ponds and Ditches	Unknown to present	Aluminum waste on ground in outdoor areas is drained into unlined ditches.	Conduct soil and ground water sampling; remediate as needed.
7. Gasoline Underground Storage Tank	1978 to present	None	Under proper authority, conduct tank testing.

Recommendations: RAI recommends no further action for this unit.

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SWMU 3 Cooling Tower Pit Area

Conclusions: This unit consists of a concrete pit managing cooling tower water, an oil skimming device, and a 55-gallon drum for accumulation of the skimmed cooling tower waste. Cooling tower waste is managed on the floor of the pit for periods of greater than 90 days. The area surrounding the pit was covered with aluminum waste. The potential for release to environmental media is detailed below:

Ground Water: Moderate. This area drains to an unlined ditch (AOC 6), where a release to soil is likely to have already occurred; contaminants may migrate to ground water.

Surface Water: Moderate. The area drains through the aforementioned ditch into a detention pond which can overflow to the Des Plaines River. Thus, a release could occur to surface water.

Air: High. The unit is exposed to air, and manages volatile wastes.

On-Site Soils: High. It is likely that a release to soil in the drainage ditch has already occurred, as the asphalt area surrounding the unit drains to this ditch.

Recommendations: RAI recommends that if ATA wishes to maintain RCRA interim status as a storage facility, the Part A permit application be amended to include this unit. If the facility wishes to withdraw its Part A permit application, this unit should undergo formal RCRA closure. It is also recommended that wastes in the area of the unit be managed so as to minimize the potential for a release to the drainage ditch. In addition, it is recommended that adequate secondary containment for the area be installed to prevent migration of any releases.

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SWMU 4 **Flake Dryer Holding Tank**

Conclusions: This unit manages spent solvent that has been removed from the flake drying process by evaporation and condensation. The potential for release to environmental media is detailed below:

Ground Water: Moderate. The asphalt area surrounding the tank was covered with aluminum waste. This area drains to an unlined ditch, where a release to soil is likely to have already occurred. A release may have already have migrated to ground water.

Surface Water: Moderate. The area drains through the ditch into the north detention pond which is designed to overflow to the adjacent Des Plaines River. Thus, a release to surface water may have already occurred.

Air: High. The unit is exposed to air, and manages volatile wastes.

On-Site Soils: High. The area of the unit drains to the unlined drainage ditch; thus, it is likely that a release to soil has already occurred.

Recommendations: RAI recommends that wastes in the area of the unit are managed so as to minimize the potential for a release to the drainage ditch. In addition, it is recommended that adequate secondary containment for the area be installed to prevent migration of any releases.

SWMU 5 **Spent Acetone Drum Storage Area**

Conclusions: This unit consists of three 55-gallon drums on a pallet, managing spent acetone (F003). The unit has a low potential for release to ground water, surface water, air, and on-site soils, as wastes are stored in closed drums, and no evidence of release was observed.

Recommendations: RAI recommends no further action for this unit.

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SWMU 6 **Lab Solvent Storage Tank**

Conclusions: This unit houses a 500-gallon steel tank which manages spent mineral spirits (D001) from the wet-screen laboratory. The unit has a low potential for release to ground water, surface water, air, and on-site soils, as the tank is in good condition, and no evidence of release was observed.

Recommendations: RAI recommends no further action for this unit.

SWMU 7 **Satellite Accumulation Areas**

Conclusions: These areas are used for the accumulation of up to 55 gallons of hazardous wastes at, or near, the point of generation. The potential for release to ground water, surface water, air, and on-site soils is low for all areas except the accumulation drum from the vacuum mixing process, located outside Building 10B. A small release to soil has occurred here, and it may have migrated to ground water. Thus, at this location, the potential for release to ground water is moderate, and the potential for a release to surface water and air is low. All other accumulation areas are located either indoors, and/or show no evidence of or potential for release.

Recommendations: RAI recommends that soil sampling be conducted in the vicinity of the Building 10B aluminum sludge accumulation area, and that the area be remediated accordingly.

SWMU 8 **Wastewater Treatment System**

Conclusions: This unit manages and treats process and sanitary wastewaters prior to discharge to the City of Joliet sewer system. The unit has a low potential for release to ground water, surface water, air, and on-site soils; the system is soundly constructed and no releases have been documented.

Recommendations: RAI recommends no further action for this unit.

SWMU 9 **Waste Grease Storage Area**

Conclusions: This unit consists of drums of waste grease gene[illegible] /. The unit has a low potential for release to groun[illegible] 1-site soils. Wastes are managed in steel drums on a pallet located on sound concrete floor.

Recommendations: RAI recommends no further action for this unit.

SWMU 10 **Former Baghouse**

Conclusions: This unit managed waste ash from the secondary aluminum smelting operation. The unit has a nonexistent potential for release to ground water, surface water, air, and on-site soils, as the baghouse was removed in 1983. The past potential for release to these environmental media is unknown, as no information on the unit was available from facility representatives.

Recommendations: If the facility cannot provide documentation indicating that the ash is nonhazardous, RAI recommends soil sampling for metals in the vicinity of the unit. Otherwise, RAI recommends no further action for this unit.

SWMU 11 **Former Benzole Building Area**

Conclusions: This area is a possible former location of a tar well dating from the coal gasification operations. Soil and ground water sampling by D & M revealed significant base/neutral, VOC, phenol, and ammonia contamination. Some soil was excavated in 1990, and is currently piled in the area. The potential for release to environmental media is detailed below:

Ground Water: Contamination has already occurred, and the excavated soil may be leaking contaminants into soil, and possibly ground water.

Surface Water: High. The contaminants are likely to have migrated via one of the drainage ditches to the detention pond, and thus out to the Des Plaines River.

Air: High. Soil was contaminated with VOCs, which have most likely evaporated, releasing to air.

On-Site Soils: Significant contamination has already occurred, and soil has been excavated as a result. The excavated soil pile may be leaking contaminants into the underlying soil, as there is no sheeting beneath the pile.

Recommendations: RAI recommends further soil and ground water sampling in the excavated area to determine if contamination still exists, with further remediation if necessary. If the existing excavated soil is determined to be hazardous, it has been stored on site for greater than 90 days, and the area may require formal RCRA closure. The excavated soil pile should be managed so as to preclude migration of contaminants to soil or ground water.

AOC 1 **Former Gas Holder Area**

Conclusions: This area was formerly used by NIGC during coal gasification operations. Significant soil contamination with cyanide, ammonia, and base/neutral compounds was identified by D & M. The potential for release to environmental media is detailed below:

Ground Water: High. Although no ground water was encountered during drilling, it is likely that contaminants have migrated to ground water, as the water table resides at a shallow depth in the area.

Surface Water: High. Contaminants are likely to have migrated via drainage ditches to one of the detention ponds, and possibly to the adjacent Des Plaines River.

Air: Low. No contamination with volatile constituents was identified.

On-Site Soils: A release to soil has occurred. No remediation has occurred as yet.

Recommendations: RAI recommends further soil and ground water sampling to identify the extent of contamination, and remediation as necessary.

AOC 2 **Area East of Building 3B**

Conclusions: This area also exhibits soil contamination with cyanide, ammonia, and sulfide. The potential for release to environmental media is detailed below:

Ground Water: High. Although no ground water was encountered during drilling, it is likely that contaminants have migrated to ground water, as the water table resides at a shallow depth in the area.

Surface Water: High. Contaminants are likely to have migrated via drainage ditches to one of the detention ponds, and possibly to the adjacent Des Plaines River.

Air: Low. No contamination with volatile constituents was identified.

On-Site Soils: A release to soil has occurred. No remediation has occurred as yet.

Recommendations: RAI recommends further soil and ground water sampling to identify the extent of contamination, and remediation as necessary.

AOC 3 **Former Coke Oven Area**

Conclusions: The soil and ground water in this area have been found to be contaminated with cyanide, ammonia, phenol, and sulfide. The potential for release to environmental media is detailed below:

Ground Water: Contamination has already occurred. No remediation has been performed.

Surface Water: High. Contaminants are likely to have migrated via drainage ditches to one of the detention ponds, and possibly to the adjacent Des Plaines River.

Air: Low. No contamination with volatile constituents was identified.

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On-Site Soils: A release to soil has already been identified, and no remediation has yet been performed.

Recommendations: RAI recommends further soil and ground water sampling to identify the extent of contamination, and remediation as necessary.

AOC 4 **Area West of Detention Pond**

Conclusions: This area was found to have soil and ground water contamination with base/neutral compounds, ammonia, and cyanide. The potential for release to environmental media is detailed below:

Ground Water: Contamination has already occurred. No remediation has been performed.

Surface Water: High. Contaminants are likely to have migrated via drainage ditches to one of the detention ponds, and possibly to the adjacent Des Plaines River.

Air: Low. No contamination with volatile constituents was identified.

On-Site Soils: A release to soil has already been identified, and no remediation has yet been performed.

Recommendations: RAI recommends further soil and ground water sampling to identify the extent of contamination, and remediation as necessary.

AOC 5 **Former Tar Well Area**

Conclusions: This area was identified by OB & G as the possible location of a former tar well. Soil contamination with base/neutrals, ammonia, phenol, and sulfide was found. The potential for release to environmental media is detailed below:

Ground Water: High. There is a good likelihood that contaminants have migrated to ground water, as the water table resides at a shallow depth in the area, and soil contamination has already been identified.

Surface Water: High. Contaminants are likely to have migrated via drainage ditches to one of the detention ponds, and possibly to the adjacent Des Plaines River.

Air: Low. No contamination with volatile constituents was identified.

On-Site Soils: A release to soil has occurred. No remediation has occurred as yet.

Recommendations: RAI recommends further soil and ground water sampling to identify the extent of contamination, and remediation as necessary.

AOC 6 **Detention Ponds and Ditches**

Conclusions: The two detention ponds and related unlined ditches serve to capture runoff from the facility property. The potential for release to environmental media is detailed below:

Ground Water: High. A release to soil has most likely occurred due to the presence of aluminum waste on the ground throughout the outdoor areas of the facility.

Surface Water: High. Water in the ponds overflows to the Des Plaines River, thus contaminants in the pond water would be released to the river.

Air: High. Volatile constituents, such as mineral spirits, may evaporate from the pond surface.

On-Site Soils: High. It is very likely that a release to soil in the drainage ditches has already occurred.

Recommendations: RAI recommends soil and ground water sampling to identify the nature and extent of contamination in the ditches and the ponds. Remediation should then be performed as needed.

AOC 7 **Gasoline Underground Storage Tank**

Conclusions: This AOC is an 8,000-gallon UST used for the storage of product gasoline. The potential for release to environmental media is detailed below.

Ground Water: High. The tank has not been tested recently, and may be leaking. Any release would be likely to affect ground water, as the water table is at shallow depth beneath the facility.

Surface Water: Low. The unit is situated below grade.

Air: Low. The unit is situated below grade, and has recently been equipped with a vapor retention device.

On-Site Soils: High. The tank has not been tested recently, has no secondary containment, and may be leaking.

Recommendations: RAI recommends that, under the proper authority, tank testing be conducted.

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ATTACHMENT A

EPA PRELIMINARY ASSESSMENT FORM 2070-12

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IL	ILD 000 716 860

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) Alcan-Toyo America, Inc.	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER 17401 South Broadway (Route 53)				
03 CITY Lockport	04 STATE IL	05 ZIP CODE 60441	06 COUNTY Will	07 COUNTY CODE	08 CONG DIST
09 COORDINATES: LATITUDE 41 34 10 N LONGITUDE 088 04 55 W					

10 DIRECTIONS TO SITE *(Starting from nearest public road)*

I-55 to Bolingbrook (Route 7) exit. Follow Route 7 south (becomes Route 53) for about 9 miles. Facility is on east side of Route 53, about 0.25 mile south of Stateville Prison.

III. RESPONSIBLE PARTIES

01 OWNER *(if known)* Alcan-Toyo America, Inc.	02 STREET *(Business, mailing, residential)* 1717 North Naper Boulevard		
03 CITY Naperville	04 STATE IL	05 ZIP CODE 60563	06 TELEPHONE NUMBER (708) 505-2160
07 OPERATOR *(If known and different from owner)* Same as owner.	08 STREET *(Business, mailing, residential)*		
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER

13 TYPE OF OWNERSHIP *(Check one)*

- ☒ A. PRIVATE
- ☐ B. FEDERAL: ______ *(Agency name)*
- ☐ C. STATE
- ☐ D. COUNTY
- ☐ E. MUNICIPAL
- ☐ F. OTHER ______ *(Specify)*
- ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE *(Check all that apply)*

- ☒ A. RCRA 3010 DATE RECEIVED: 06 / 14 / 80 (MONTH DAY YEAR)
- ☐ B. UNCONTROLLED WASTE SITE *(CERCLA 103 c)* DATE RECEIVED: / / (MONTH DAY YEAR)
- ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

- ☒ YES DATE 01 / 17 / 92
- ☐ NO

BY *(Check all that apply)*

- ☐ A. EPA
- ☒ B. EPA CONTRACTOR
- ☐ C. STATE
- ☐ D. OTHER CONTRACTOR
- ☐ E. LOCAL HEALTH OFFICIAL
- ☐ F. OTHER: ______ *(Specify)*

CONTRACTOR NAME(S): Resource Applications, Inc.

02 SITE STATUS *(Check one)*

- ☒ A. ACTIVE
- ☐ B. INACTIVE
- ☐ C. UNKNOWN

03 YEARS OF OPERATION

1912 (BEGINNING YEAR) Present (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

The following substances are currently generated or are located on site: mineral spirits, stearic acid, spent baghouse bags, spent filter cloths, cooling tower waste, aluminum sludge, acetone, waste paint mixture, waste oil, waste grease, wastewater sludge, and PCBs. The following wastes were generated during coal gasification operations from 1912 to 1960, and may still be on site in the form of ground water or soil contaminants: tar sludges, clinkers, ash, coke, cyanide, ammonia, and sulfur salts, oil sludges, contaminated liquors, sulfur removal wastes, miscellaneous sludges, petroleum sludges, lamp black, and purifier wastes.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

Significant soil and ground water contamination has been identified as a result of the coal gasification operations. Contaminants are volatile organic compounds (VOCs), base/neutral compounds, ammonia, cyanides, and phenol. In addition, aluminum sludge containing mineral spirits has released to outdoor areas of the facility, and may have contaminated soil and ground water.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION *(Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents.)*

- ☒ A. HIGH *(Inspection required promptly)*
- ☐ B. MEDIUM *(Inspection required)*
- ☐ C. LOW *(Inspect on time-available basis)*
- ☐ D. NONE *(No further action needed; complete current disposition form)*

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF *(Agency/Organization)*			03 TELEPHONE NUMBER
Kevin Pierard	EPA Region 5			(312) 886-4448
04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Alan Suppie		Resource Applications, Inc.	(312) 332-2230	01 / 17 / 92 (MONTH DAY YEAR)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IL	ILD 000 716 860

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

- ☒ A. SOLID
- ☒ B. POWDER, FINES
- ☒ C. SLUDGE
- ☐ D. OTHER ______ *(Specify)*
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE *(Measures of waste quantities must be independent)*

TON ______

CUBIC YARDS ______

NO. OF DRUMS approx. 55

03 WASTE CHARACTERISTICS *(Check all that apply)*

- ☒ A. TOXIC
- ☒ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☒ G. FLAMMABLE
- ☒ H. IGNITABLE
- ☒ I. HIGHLY VOLATILE
- ☒ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	Unknown		Aluminum sludge, wastewater sludge, coal gasification sludges
OLW	OILY WASTE	Unknown		Waste oil and grease; petroleum sludges
SOL	SOLVENTS	Unknown		Acetone, mineral spirits
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES	Unknown		Ammonia from coal gasification
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES *(See Appendix for most frequently cited CAS Numbers)*

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
F003	Acetone	67-64-1	Drummed/sent off site	Unknown	
D001	Waste paint mixture	Unknown	Drummed/sent off site	Unknown	
D001	Mineral spirits	8052-41-3	Tank/sent off site	Unknown	
	Stearic acid	57-11-4	Sent off site with mineral spirits	Unknown	
	PCBs	1336-36-3	Removed by contractor		

V. FEEDSTOCKS *(See Appendix for CAS Numbers)*

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION *(Cite specific references; e.g., state files, sample analysis, reports)*

Visual site inspection, January 17, 1992.
Illinois EPA and EPA Region 5 files

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IL	ILD 000 716 960

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) — ☒ POTENTIAL — ☒ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: ______ — 04 NARRATIVE DESCRIPTION

Ground water contamination has been identified at AOCs 3 and 4, as a result of the coal gasification operations. Contaminants are cyanides, base/neutral compounds VOCs, phenol, and ammonia. There is also a potential for release to ground water from AOCs 1, 2, 5, 6 and 7, and SWMUs 3, 4, and 7.

01 ☒ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) — ☒ POTENTIAL — ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: ______ — 04 NARRATIVE DESCRIPTION

There is a high potential for release to surface water from SWMU 11 and AOCs 1 through 5, where contamination of soil and/or ground water has already been identified. These areas drain via unlined ditches to detention ponds (AOC 6), which overflow to the adjacent Des Plaines River. The areas surrounding SWMUs 3 and 4 also drain to the detention ponds.

01 ☒ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: ____) — ☒ POTENTIAL — ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _ — 04 NARRATIVE DESCRIPTION

SWMUs 3 and 4 manage volatile wastes, and are exposed to air; thus the potential for an air release is high. SWMU 11 and AOC 6 also have a high potential for release to air, due to the potential, and identified, presence of volatile constituents in soil and in surface water.

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: ________) — ☒ POTENTIAL — ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: ______ — 04 NARRATIVE DESCRIPTION

None identified.

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: ________) — ☐ POTENTIAL — ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: ______ — 04 NARRATIVE DESCRIPTION

None identified.

01 ☒ F. CONTAMINATION OF SOIL — 02 ☒ OBSERVED (DATE: 01/17/92) — ☐ POTENTIAL — ☒ ALLEGED

03 AREA POTENTIALLY AFFECTED: ________ *(Acres)* — 04 NARRATIVE DESCRIPTION

Soil contamination has been identified at SWMUs 1, 7, and 11, and at AOCs 1 through 5. The soil in the SWMUs was observed to contain aluminum waste, possibly containing mineral spirits. The AOCs are contaminated with VOCs, cyanides, ammonia, base/neutral compounds, and phenol. The potential for release to soil is high from SWMUs 3 and 4, and AOCs 6 and 7.

01 ☒ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ________) — ☒ POTENTIAL — ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: unknown — 04 NARRATIVE DESCRIPTION

Ground water is used as a source of water for the surrounding communities. Ground water is contaminated, and thus there is a possibility that drinking water supplies could be affected. However, most wells, including the two located at the facility, are completed in deep bedrock (>700 feet).

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ________) — ☐ POTENTIAL — ☐ ALLEGED

03 WORKERS POTENTIALLY AFFECTED: ______ — 04 NARRATIVE DESCRIPTION

None identified.

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ________) — ☐ POTENTIAL — ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: ______ — 04 NARRATIVE DESCRIPTION

None identified. The facility is fenced, has 16-hour security guards, and is locked when guards are not on duty. The potential for inadvertant access to the facility is low.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IL	ILD 000 716 660

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: ________) — ☐ POTENTIAL — ☐ ALLEGED

04 NARRATIVE DESCRIPTION

No damage to flora was identified.

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: ________) — ☐ POTENTIAL — ☐ ALLEGED

04 NARRATIVE DESCRIPTION (Include name(s) of species)

No damage to fauna was identified.

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: ________) — ☐ POTENTIAL — ☐ ALLEGED

04 NARRATIVE DESCRIPTION

No contamination of the food chain was identified.

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES — 02 ☐ OBSERVED (DATE: ________) — ☐ POTENTIAL — ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: ______ — 04 NARRATIVE DESCRIPTION

None identified.

01 ☐ N. DAMAGE TO OFF-SITE PROPERTY — 02 ☐ OBSERVED (DATE: ________) — ☒ POTENTIAL — ☐ ALLEGED

04 NARRATIVE DESCRIPTION

No damage to off-site property was identified.

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPS — ☐ OBSERVED (DATE: ______) — ☐ POTENTIAL — ☐ ALLEGED

04 NARRATIVE DESCRIPTION

None identified.

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☒ OBSERVED (DATE: 05/28/90) — ☐ POTENTIAL — ☐ ALLEGED

04 NARRATIVE DESCRIPTION

Construction debris was dumped on site in wetland areas on or before May 28, 1990. The material was subsequently removed, and the area was remediated.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

None identified.

III. TOTAL POPULATION POTENTIALLY AFFECTED: ____________________

IV. COMMENTS

Significant soil and ground water contamination has been identified due to the coal gasification operations conducted from 1912 to 1960. In addition, aluminum waste has been released to the outdoor asphalt areas around the facility buildings; these areas drain to an unlined ditch and into the detention ponds; thus it is likely that soil and ground water contamination has occured as a result.

V. SOURCES OF INFORMATION *(Cite specific references; e.g., state files, sample analysis, reports)*

Visual site inspection, January 17, 1992.
Illinois EPA and EPA Region 5 files
Dames and Moore: Environmental Assessment, 1989.
O'Brien and Gere Engineers, Inc.: Summary of Environmental Data, 1990.

ATTACHMENT B

VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS

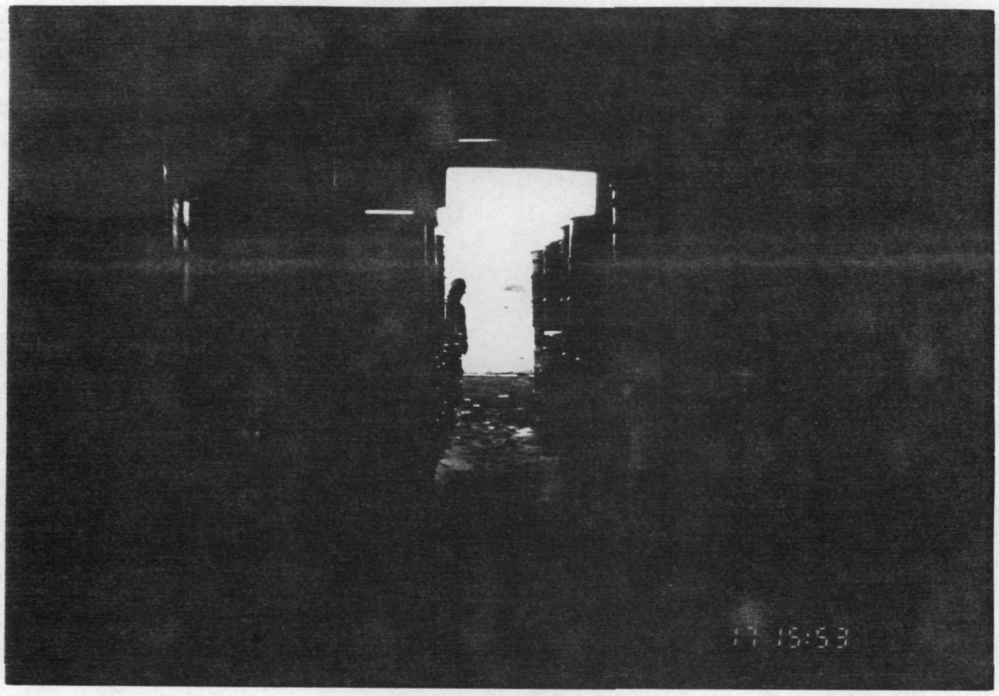
VISUAL SITE INSPECTION SUMMARY

Alcan-Toyo America, Inc.
Lockport, Illinois
ILD 000 716 860

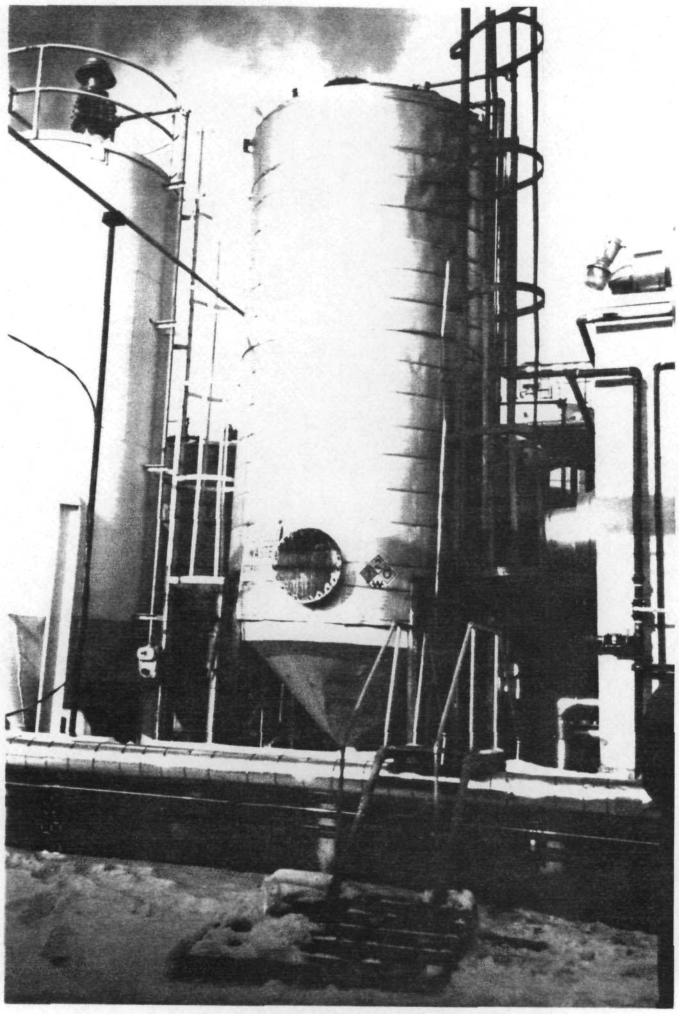
Date:	January 17, 1992
Facility Representatives:	Richard W. Kray, Assistant Operations Manager
Inspection Team:	Alan Supple, Resource Applications, Inc. (RAI) Laura Czajkowski, RAI
Photographer:	Laura Czajkowski, RAI
Weather Conditions:	Windy, sunny, temperature about 25°F
Summary of Activities:	The visual site inspection (VSI) began at 9:20 a.m. with an introductory meeting. The inspection team discussed the purpose of the VSI and the agenda for the visit. Facility representatives then discussed the ATA facility's past and current operations, solid wastes generated, and history of documented releases. Most of the information was exchanged on a question-and-answer basis. ATA representatives provided the inspection team with copies of documents requested.

The VSI tour began at 1:30 p.m. The inspection team walked through the facility observing manufacturing processes and past and present SWMUs. Most SWMUs are located outdoors. Aluminum powder was observed on the floor of the Hazardous Waste Drum Storage Area (SWMU 1). The asphalt area around the Cooling Tower Pit Area (SWMU 4) and the Flake Dryer Holding Tank (SWMU 5) was covered with aluminum powder and paste. In addition, other outdoor areas showed evidence of spillage of aluminum product. A drum accumulating aluminum sludge outside Building 10B was observed to have released onto the ground. SWMU 11, the Former Benzole Building Area, was the site of a 1990 soil excavation due to the presence of elevated levels of VOCs and other contaminants. The excavated soil was observed piled adjacent to the area of the removal. The Detention Ponds and Ditches (AOC 6) were identified as an area of concern because of the possibility of a release to the environment, via drainage ditches, of the aluminum paste that was observed on the ground (see above).

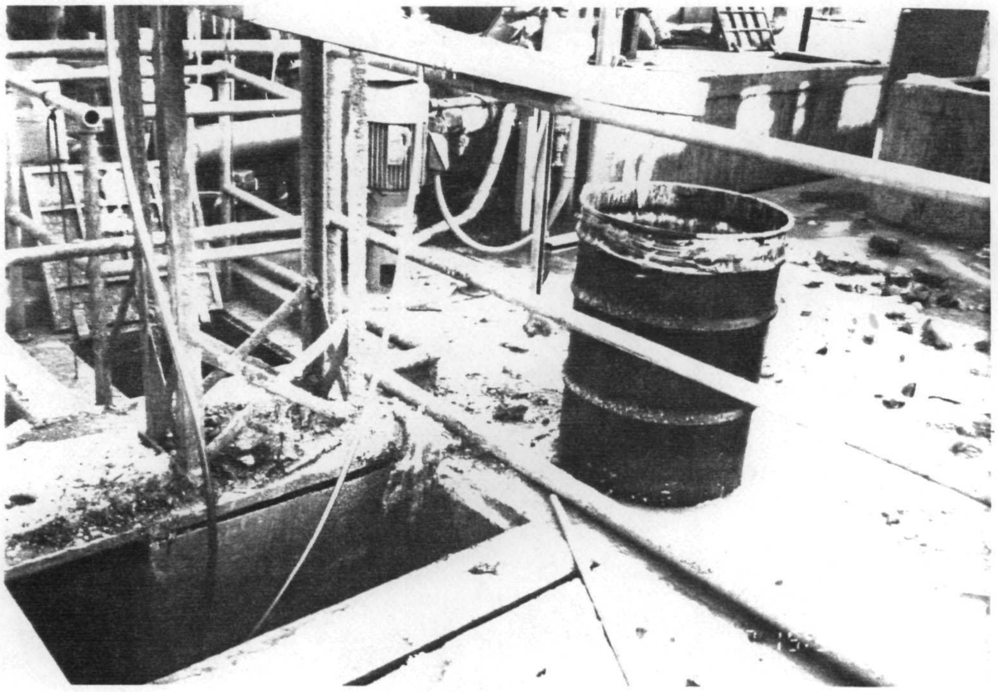
The tour concluded at 3:30 p.m., after which the inspection team held an exit meeting with Richard Kray. The VSI was completed and the inspection team left the facility at 3:40 p.m.



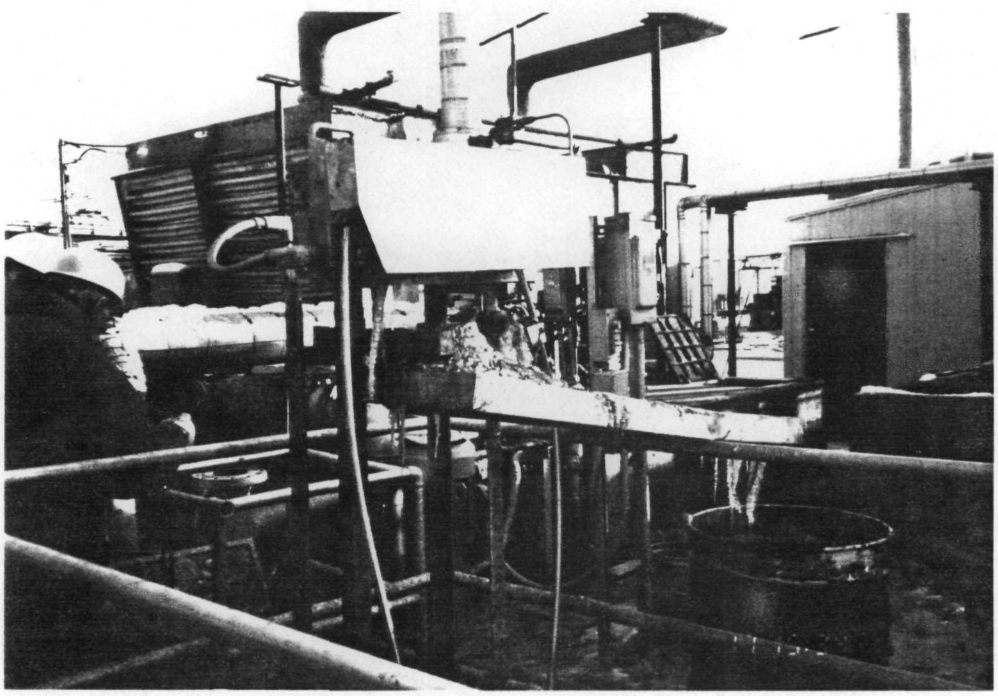
Photograph No. 1 | Location: SWMU 1
Orientation: South | Date: 1/17/92
Description: This is Hazardous Waste Drum Storage Area. The floor in the foreground is concrete, while the area in the background is dirt-floored. Note that drums are stacked three-high on the left.



Photograph No. 2 | Location: SWMU 2
Orientation: North | Date: 1/17/92
Description: This is the Spent Mineral Spirits Storage Tank. It is located inside concrete containment within the tank farm.



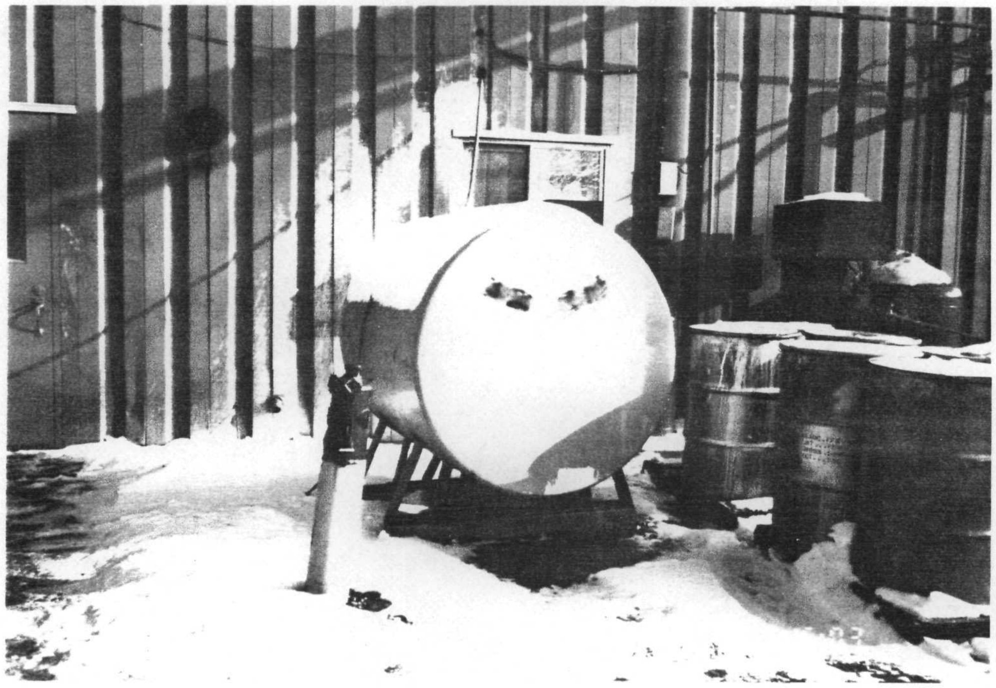
Photograph No. 3 Location: SWMU 3
Orientation: South Date: 1/17/92
Description: This is the Cooling Tower Pit Area. Solvent and aluminum is skimmed from the pit in the bottom left hand corner of the photo. The pit contains cooling tower water. Note the aluminum waste covering the surrounding area.



Photograph No. 4 Location: SWMU 3
Orientation: South Date: 1/17/92
Description: The skimmed material from the pit is accumulated in the 55-gallon drum.

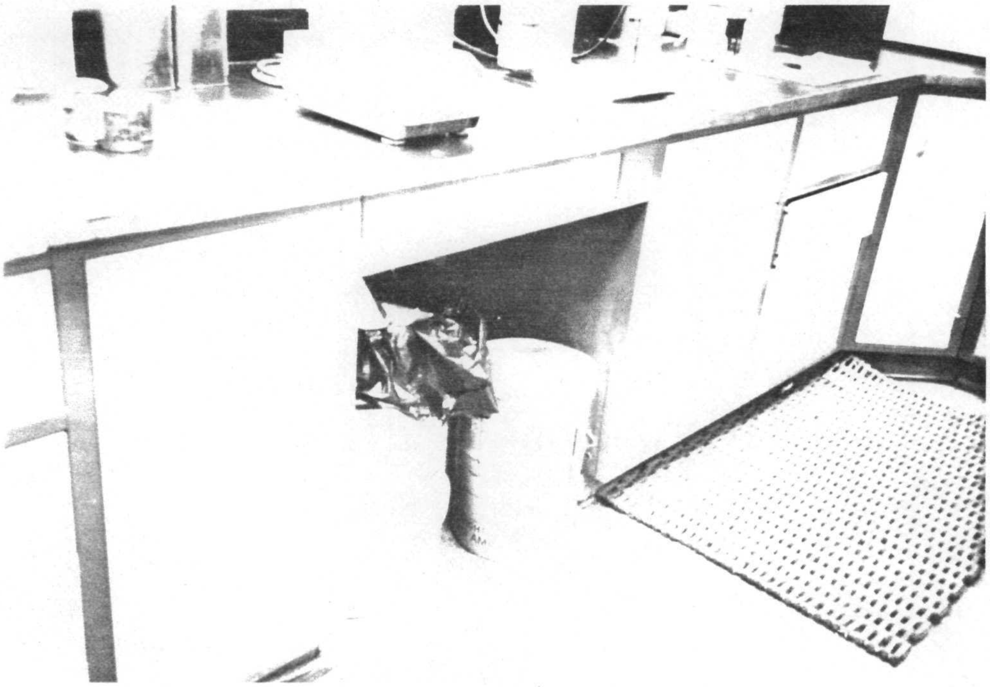
Photograph No. 5 | Location: SWMU 4
Orientation: East | Date: 1/17/92
Description: This is the Flake Dryer Holding Tank. Mineral spirits is removed from aluminum flake mixtures by evaporation, and the spent solvent is condensed into this tank. Note the aluminum paste on the ground.

Photograph No. 6 | Location: SWMU 5
Orientation: North | Date: 1/17/92
Description: The three drums on the right are located in the Spent Acetone Drum Storage Area, adjacent to Building 2. The drums on the left contain aluminum paste awaiting reprocessing.



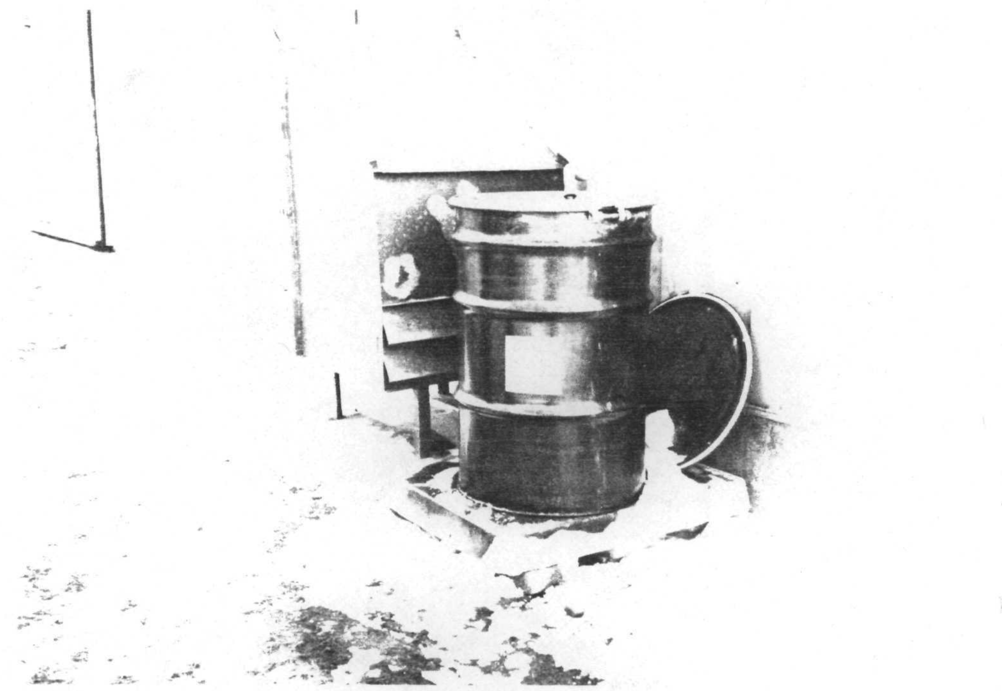
Photograph No. 7 Location: SWMU 6
Orientation: East Date: 1/17/92
Description: This is the Lab Solvent Storage Tank, managing spent mineral spirits from the wet screen laboratory. Solvent is introduced through the rubber hose exiting the wall of Building 2.

Photograph No. 8 Location: SWMU 7
Orientation: East Date: 1/17/92
Description: The black drum is one of the Satellite Accumulation Areas for spent filter cloths. The other drums are either empty or contain aluminum paste.



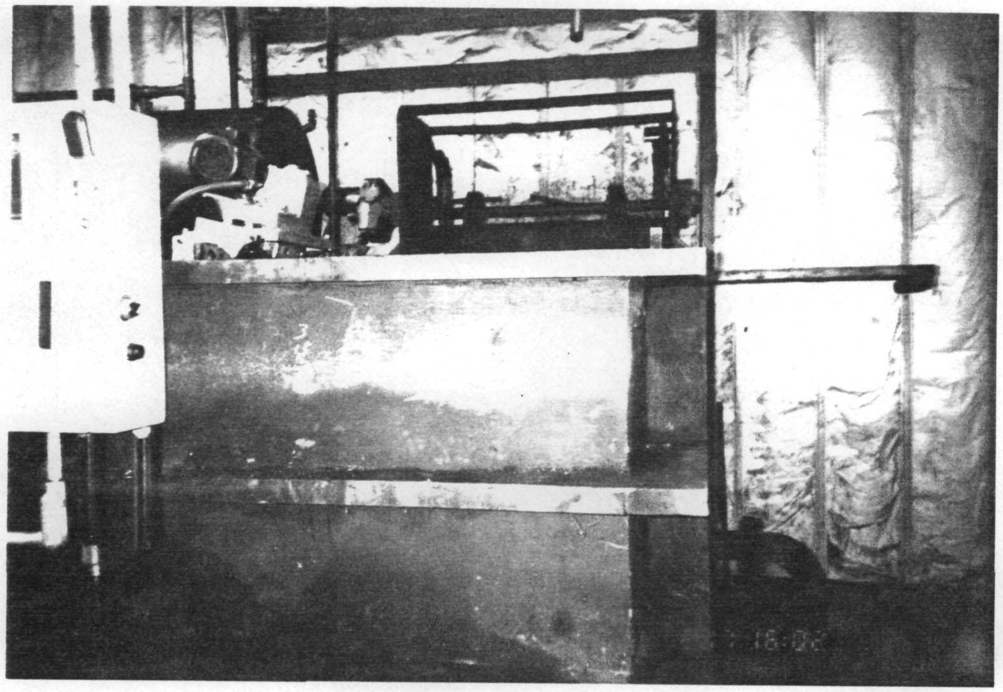
Photograph No. 9 Location: SWMU 7
Orientation: Northeast Date: 1/17/92
Description: This is one of the 6-gallon metal containers accumulating waste paint mixture in the Building 10B laboratory. When full it is emptied into a 55-gallon drum outside the building.

Photograph No. 10 Location: SWMU 7
Orientation: South Date: 1/17/92
Description: The drum on the right is accumulating waste paint outside the Building 10B laboratory.

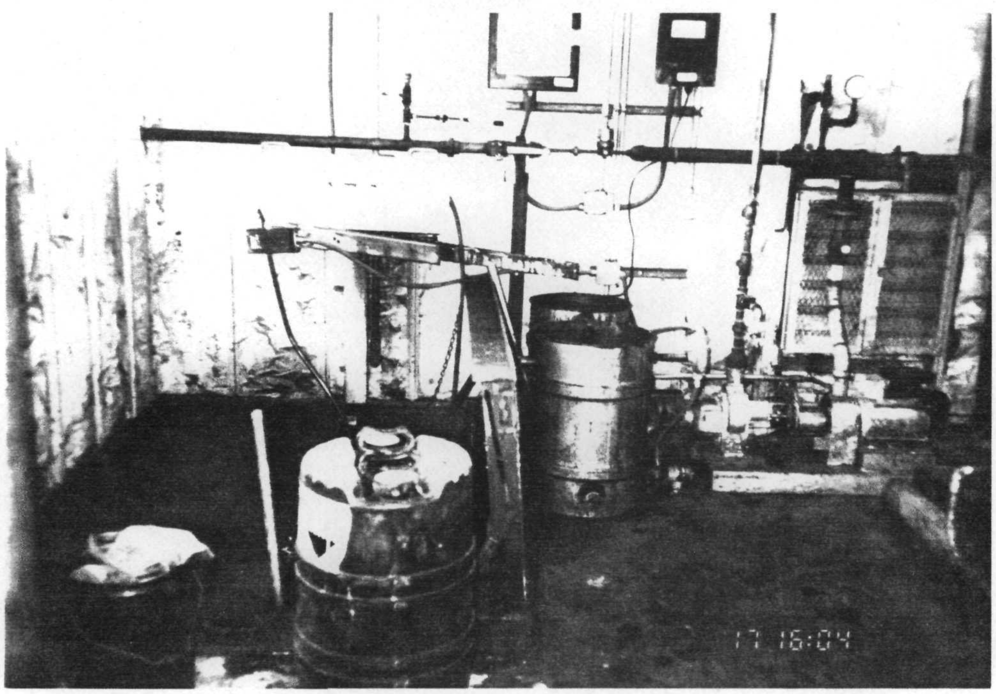


Photograph No. 11 Location: SWMU 7
Orientation: East Date: 1/17/92
Description: This drum is accumulating aluminum sludge condensed from a mixing unit within Building 10B. Note the liquid on the concrete and on the ground around the drum.

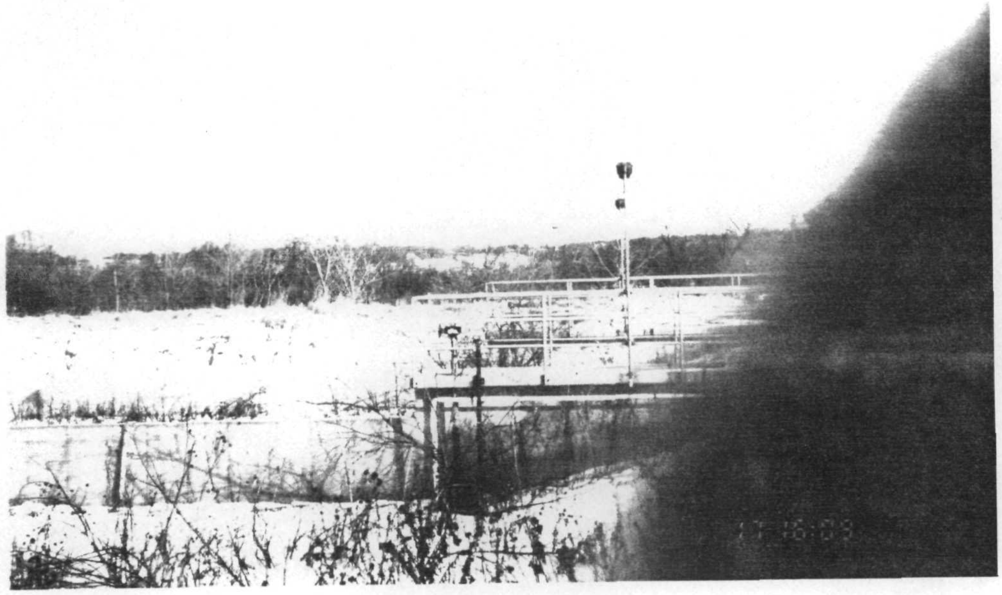
Photograph No. 12 Location: SWMU 7
Orientation: North Date: 1/17/92
Description: The 55-gallon drum in this photo is used to accumulate overspill during loading and unloading of solvents from the tank farm.



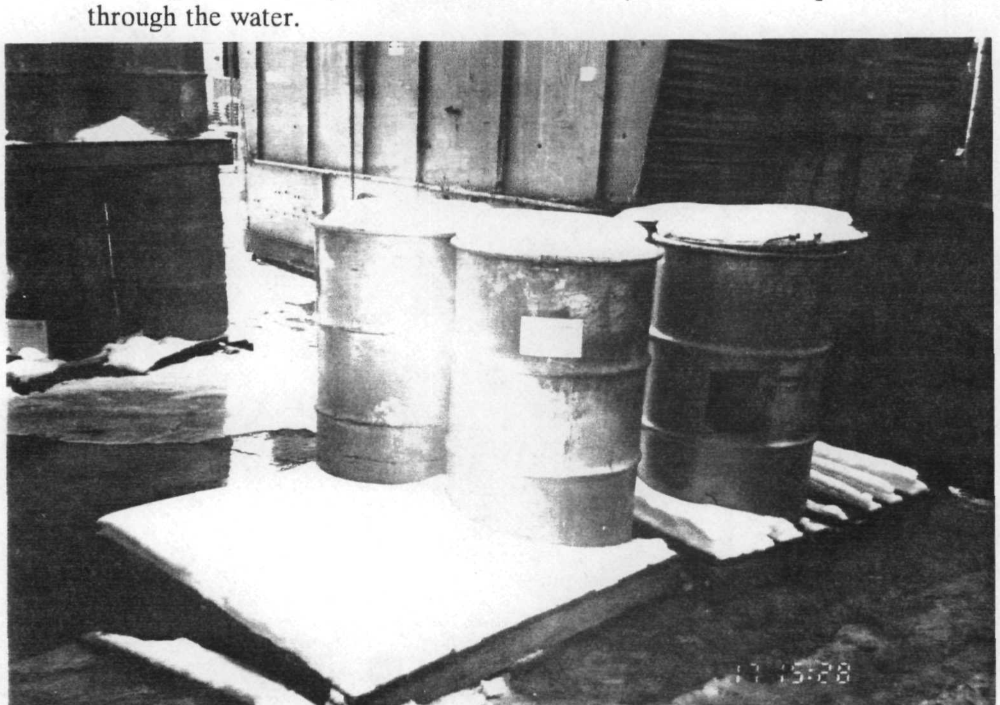
Photograph No. 13 Location: SWMU 8
Orientation: West Date: 1/17/92
Description: This is the Edens oil and solids separator, part of the Wastewater Treatment System. Wastewater is fed into here from the surge tank and oil is skimmed from the surface. Wastewater sludge is periodically removed from the bottom of the tank.



Photograph No. 14 Location: SWMU 8
Orientation: East Date: 1/17/92
Description: The pit on the left hand side of this photo is the flow equalizing tank, where compressed air is bubbled through the water, pH is adjusted, and waste oil is skimmed from the surface.



Photograph No. 15 — Location: SWMU 8
Orientation: East — Date: 1/17/92
Description: This is the holding basin used for temporary storage of treated wastewater that cannot be discharged to the City of Joliet sewer. It is clay-lined, and compressed air is bubbled through the water.



Photograph No. 16 — Location: SWMU 9
Orientation: Southwest — Date: 1/17/92
Description: This is the Waste Grease Storage Area, managing drums of waste grease from the ball mill machinery. A determination of the hazardous or nonhazardous nature of the waste has not yet been made.

Photograph No. 17 Location: SWMU 10
Orientation: East Date: 1/17/92
Description: The area containing the drums is the location of the Former Baghouse, used during secondary aluminum smelting operations.

Photograph No. 18 Location: SWMU 11
Orientation: West Date: 1/17/92
Description: This is the area from which benzene-contaminated soil was excavated in 1990. It is referred as the Former Benzole Building Area. Soil and ground water contaminated with VOCs, base/neutral compounds, phenol, and ammonia has been identified.

Photograph No. 19 Location: SWMU 11
Orientation: Northwest Date: 1/17/92
Description: The plastic-covered pile is the excavated soil. Alcan is awaiting a decision from IEPA on a disposal method for this waste.

Photograph No. 20 Location: AOC 2
Orientation: West Date: 1/17/92
Description: This area is referred to as the Area East of Building 3B. Cyanide, ammonia, and sulfide soil contamination was found in 1989. No remediation has yet occurred.

Photograph No. 21 Location: AOC 6
Orientation: Northeast Date: 1/17/92
Description: This is an unlined ditch which drains the northern outdoor area of the facility, including the tank farm. The ditch leads to the northern detention pond.

Photograph No. 22 Location: AOC 6
Orientation: North Date: 1/17/92
Description: This is northern detention pond. It is clay-lined, and overflows to the adjacent Des Plaines River.

Photograph No. 23 Location: AOC 6
Orientation: South Date: 1/17/92
Description: This is the southern detention pond. It serves as a source of fire-fighting water for the facility.

Photograph No. 24 Location: AOC 6
Orientation: South Date: 1/17/92
Description: This is a drain located in the vicinity of Building 2. It leads to a ditch and, ultimately, to one of the detention ponds. All runoff from the area is collected via similar drains and ditches.

Photograph No. 25 Location: AOC 7
Orientation: East Date: 1/17/92
Description: The area surrounded by a concrete berm is the location of the Gasoline Underground Storage Tank.

ATTACHMENT C

VISUAL SITE INSPECTION FIELD NOTES

Berkeley CA plant closed in 1984 due to air pol. & lease problems.
Moved ops. to Lockport
Powders plant constructed 1979 – operational 1st $\frac{1}{4}$ 1980.

July 1987 – Toyo Al – Osaka, Japan.
Approached Alcan re facility for Al pigment for car industry (Jap. car plants in U.S.)
⇒ 80% of division purchased from Alcan.

Alcan has had JV w/ Toyo since 1933.
Own 49% of Toyo.
Now Alcan – Toyo America, Inc.
Other facility Alcan – Toyo Europe
Car industry: $10M expansion to produce auto paste.

Powder – Al powder for heat to transform exotic metals.
+ HCl added – Al chlorohydrate (anti-perspirant)
+ Base – Maalox – Al hydroxide.
Catalyst – alkyl industry.

Also manuf Al pigment.

1/17/92

2 different types: <u>leafing</u> – roof coatings, paint silos; reflects UV, like TiO_2

<u>non-leafing</u>: automotive ind. for metallic paints

Milling process – stearic acid for leafing grade
Al powder has consistency of flour
Cylinder horiz. w/ ball bearings. 8-10 inches on diameter of ball mill is bar.
40% of volume is steel balls.
Critical speed – balls don't ride p circumference – drop down. M. Spirits = solvent + Al powder
Size of Al flake depends on length of grinding & ratio Al:M.S.
Break Al_2O_3 coating on grain w/ ball. Absorbs O_2 from air and creates heat → Al stearate coating on it when crushed – protects flake.
After grinding – discharge material by pump. Add additional M.S. to wash out ball mill. All collected in a tank. Run over screen – get out large particles.
Screen mat. put into another tank – put through filter press.

1/17/92

PA/VSI Alcan-Toyo America, Inc. (21)

9:00 a.m. 1/17/92 25-30°F
Sunny, windy

Richard W. Kray - Asst. Operations Manager

Building since 1910. Coal-gas liquefication plant
(Northern Illinois Gas operating for Com. Ed.)

≈1964 - sold to Intercontinental Alloys (ICA)

2° Al operation. Al scrap - shred & remelt. Cast
into ingots - sell to foundries.

1976 - Alcan Aluminium Corp., Cleveland OH
bought 50% interest in ICA.

1978 bought remaining 50%

Had proposed a recycling plant but didn't happen

Increased capacity. Addit. remelting furnace ≈1980.

1983 - 2° foundry shut down

≈1980 - Part of Alcan Al. Corp - Alcan Metal Powders

Manufacture of Al powders and pigments

Aerospace industry ≈35yrs. Ingredient for solid
rocket fuel - Thiocol - minute man.
Hercules
Aerojet
MX/Patriot/Navy-Trident.

1/17/92

Leaves w/ sateen cloth. Al pigment adheres to leaves - M.S. doesn't - goes through
Mat out of Filter press - solvent clear - goes back into process.

After period of time M.S. becomes spent.
Paste either has 65% or 74% non-volatile content
Stuff in Filter press - slice of Al pigment - put into mixer. Adjust to 65% or 74% w. clean M.S.

Non-leafing almost exactly same except oleic acid instead of stearic acid. Oleic coating makes it inert. Non-leafing - flakes don't align themselves so get variable shininess on eg. metallic automobile coating. Leafing - all align → v. shiny (like a film)

Some customers cannot use flakes w/ mineral spirits → DRY AL FLAKE. <1% M.S. left in.
Vacuum dryer 25-27 in. Hg vacuum
13-14 psi steam heat source
M.S. has range of b.p. Vacuum lowers b.p. → can drive off M.S. left in filter cake.
Closed process - M.S vapor driven off - 'passes

AS 1/17/92

through condenser - reliquified
Collected in a holding tank - transferred to haz. waste tank.

Dry flake - use water to cool it - discharge to collect in drums (product). Used for printing inks, rotogravure
Al powder is airborne when dry.
Some customers ask for dry flake, add a vehicle other than M.S. diphenyl phosphate
DIDP
isopropyl alcohol.

Powder manufacture

Al block 4-5" wide, 30" long pig
sow

Contin. cast - cut off at lengths - called T-bars

Sows, T-bars or pigs are raw mat.
1° Al 99.7% pure.

Reverberatory furnace - ≈ 15,000 lbs molten Al.
Melt in furnace - air & natural gas burner.
Goes through funnel into well - insert nozzles
Preheated nozzles - feed inert atmosphere or compressed air heated to above melting point of metal. Forms a suction - atomizes Al into fine

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droplets (like aerosol)

Immediately forms oxide coating & solidify

Carried to 1° cyclone by pneumatic system.

90-95% of material will fall out - 5-10% carried over either to baghouse

or to 2° cyclone - all but ½ to 1% falls out

Remaining ½-1% collected in baghouse

Fan at end of pneumatic line

Draw ambient air from furnace room - fed into 1° cyclone. Remaining air exhausted to atmos. - no particulate matter. All matter collected in baghouse.

All of by-products in atomization are saleable items including dross from daily skimming of furnace. NO WASTE.

90-95% end product - primary grade powder

Some fine powder - used to make pigment for automotive industry.

1° cyclone - control screen. Anything passing through is end product (fine enough)

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Stuff that's caught is oversize - can be milled or sold as product.

2° cyclone - drives out superfines. (2-3 μm)

Use fine powder in 2° as milling agent.

Extra-fine - blended into mat. from other baghouse - sold as end product

Foil shredder - get roll ends & end sheets of capacitor foil. Through hammer mill - chopped Al foil.

Can put through milling process - to make flakes. 99.5% pure.

Haz. waste due to small amounts of Al - D001 class. Reaction w. water.

1. Atomizing - NO WASTE

2. Milling process - installing a solvent distillation unit

Spent solvent. Builds up superfine Al stearates

M.S. + stearic acid.

Tank of M.S 2-3 days to 2wks - then solvent becomes spent.

Pumped into 6,000-gal tank.

When full - sell to S-K - use for kiln fuel Hebron OH Dolton IL

250,000 gal./yr 1990.

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Filter cloths in presses - sateen cloth.
Cloth gets worn - doesn't trap fine Al particles
Rope & cloth into 55-gal drum. Drum full - take by forklift to HWSA. About 1-2 wks.
General paste unit (A & B) - general application
2 filter presses. One satellite pastes
Adjoining (C & D) - automotive pigments 6 presses
One sat.

Last shipment - Marine Shale, LA
Repack into 5-6 gallon paks. Can incinerated in rotary kiln.

Al pigment or sludge that is unusable. Al, stearic acid, solvent, poss H_2O. Too much Al stearates. Off-spec. Accum. into 55 gal drum - take to HWSA. Same haulers as cooling tower sludge
$\boxed{\text{5-10,000 lbs/yr}}$

Cooling tower - A, B, D ball mills - water spray on top to keep it cool. Keep int. T < 140°F
Use H_2O to keep mills cool.
C is jacketed - non-contact cooling water from tower. Loop system.

A, B, D feed from cooling tower - drains return to cooling tower. Some mat. might drop

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out of ball mill into cooling water drain - gets transferred to cooling pit @ cooling tower.

Also when such mat. out - could spill → into drain & to cooling tower

In cooling tower pit - oil skimmer. Solvent will rise + some Al foil. Skimmer mat. goes into Sat. 55-gal drum. Mainly solvent, some Al + H_2O. Also, some settles to bottom of pit. Shovel out periodically into a 55-gal. drum - cooling tower sludge waste (Al - resid.)
2-3 x per year. Accum as much as 30 drums at one cleaning. Also clean tower. Seal drums (open head) - air can get in to explode.

Skimmer satellite - combined w/ cooling tower sludge

Bottom c.t. sludge = 3-4 truckloads per year
D001 (≈ 80 drums a truckload)

Petrod-Chem Processing Inc. Detroit MI
Eltex Chem. & Supply Houston TX

Solvent distillation unit will accum. still bottoms. Will try to sell bottoms to kiln operators for fuel.

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Petroleum oil - dryer op. (vacuum pumps). Oil in crankcase. If filters are not clean, M.S. & small particles can get put into crankcase. Suck out crankcase. 7-8 55-gal. drums from 1991. Stored in HWSA. Petro-Chem, Detroit.

Hi-Flash naphtha used in M.S. for pigment.

Cone-shaped tanks - if want to change grades, must scrape out tanks. Process sludge. 55 gal. drum. HWSA. Would go out as Al sludge waste stream.

Al baghouse dust - once every 5 yrs or so. Nomax bags - monitor differential pressure. 3-5" water. Regulate frequency & length of pulse. <1μm mat. will eventually block weave up ⇒ diff. press. will rise. Must replace bags. Remove bag & dismantle

Usually ≃ 300 bags in on house. Bags into 55-gallon drum. Taken over to HW building. Shipped 30 drums - 1989. to Pollution Control Industries of America in E. Chicago IL

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Operation - shredded Al scrap. From 2° smelter. Fumes to baghouse. Removed off-site.

Never stored haz. waste in orig. ODSA

Tar residue emerges from ground on W of facility (Comm. Ed.) Did sampling & excavated soil. Applied for permit to landfill it. Benzene contam.

36 acres ≃ 4.5 acres under roof

S - Crestwill Waste Treatment Facility.

W - Stateville Penitentiary

N - some wetland. Il Mun. San. District

E - Des Plaines River & Wetland. 100 yds to river

Concrete ditch runs on N edge of property to Des Plaines River. Storm water run-off from other side of 53.

No NPDES

Drains around office flow to detention pond.

Drains by cooling tower - flow to detention pond

Swells will carry flow to detention pond if tank farm bursts.

Detention pond will hold mat. Clay liner.

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Detention pond II supplies fire water.

1400 ft well
To S of office 700 ft well
Water tested 1 x/yr potable.
Get all water supply from wells
Spillage from HWSA would flow into detention pond. All storm water would drain into D.P I or II. Overflow into Des Plaines River.

C. of Joliet MWD. Call up - if can't take wastewater from facility. Can pump wastewater into a holding tank.

WWTS
San. waste
Cooling tower sludge — Installed 1980-81 No info prior.
Sewer line goes to lift stations
Office san. waste
Boiler — Sulfuric acid control pH.
To lift station to WWTU.

Employee - 95 24 hrs/7 days
2 12 hr shifts

1 house directly over street by office
School - Caton Farm on other side of Webber Road.
2-3 mi.

Security. 5 a.m - 10 p.m. 16 hrs Locked up otherwise
Fenced off. State-owned wetlands to N
Barges on canal

Air permits for: 2 baghouses
paste plants
flake driers
shredder.

< 5 gallon spills
Gasket leaks on filter presses } Clean up. Mop floor.

Product solvent storage - stored in solvent tanks within tank farm w/ HW Tank
Stearic acids & oleic acid - B-1

PCBs - 2 in use - planning to get rid of them.
1985-86 incinerated in GA. (Westinghouse or GE)

Asbestos - 2° equip. 1984-85 removals

USTs - One 8,000-gallon gasoline tank. Will pull. GET REPORT.

Sat. for spent solvent loading area - Area II on map - diked. 55-gal drum for residual liq. in pipes
put in HW area (D001)

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SWMUS

1. WWTU
2. Holding Tank (sump) for flake drying — contam. during sampling
3. Haz. waste Tank
4. Filter Cloth Satellite (Ball Mill Filter Press) — A&D <10
5. Cooling Tower pit
6. Satellite oil skim; cooling tower } one SWMU
7. Solvent Distillation Unit
8. Former 2° smelting operation baghouse.
9. Indoor HWSA
10. Former Outdoor HWSA (?)
11. Lab Waste Storage Area
12. Lab vacuum pump (mixer) + drum.

AOCs

1. Tar pit
2. UST
3. Solvent loading area

Others

Wetland dumping
Detention ponds
Tank farm.

Spray panels in Bldg 10. Lab. Testing colors. acrylics & solvent paints. Residual paint into 55-gal. drum. Manifested as HC Sludge 3-4 drums/yr

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Also: Mixer under vacuum. Vacuum pump exhaust. Solvent vapor collected M.S & Al particles. Al sludge. Once every 4 months.

VSI

Gasoline UST - 8,000-gal. steel tank
Covered in snow - fill port looks fine.
Fire gasoline smell. 0ppm

Dames & Moore monitoring wells

Planned excavation area. Dug up material to a certain depth. Remove tar using screen. Soil tested. Material excavated will be sent off-site
See O'Brien & Gere rpt. 1990 A-T not involved

Haz. waste paint outside lab. On raised concrete platform. Manifested as D001.
One drum also stores Al paste for reworking.
Few cracks but mostly intact. Lab uses lacquer thinner, enamel, xylene
Petroleum drum N.O.S. (same as waste paint) on pallet by waste paint. Sealed - a bit rusty but labelled D001. Waiting to be taken to HWSA
Solvent loading dock
By pipes to tank farm.
Pipes locked

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6 gal metal container - open - contains Al sludge.
One 55-gal. drum here as well - closed - waste solvent.
Concrete looks in good shape - mostly snow covered.

Vacuum pump - Bldg 10 N side - 55-gal drum closed w/ rubber hose leading into drum. Oil Petroleum N.O.S. Concrete black but evidence of release - also on soil.

Some paint waste in lab. 6 gal. metal can sealed. Will be dumped in 55-gal drum outside. Seems like Al paste on floor outside lab.

Sump tank for dryer - managing M.S. Steel 300 gals. 17.4 ppm in dryer room. Stuff on floor all around. Al paste. Floor outside - drains to detention pond.

Satellite for filter press. 2 A & B units
Drum of filter cloths + drums of pigment for reclaiming.

Screens - use acetone bath. Collected used acetone. Talked to S-K about picking up.

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(W side of Building 2)
Also use acetone for cleaning. Since 1980-81
Used to be put in HW tank - lowers flash point - must be taken to Dolton S-K. 3 drums of used acetone on pallet. Probably stored for >90 days. May redistill in solvent still.

Haz. waste tank. 6,000-gal steel tank. Insulated - run solvents through heated coils to keep warm during winter. Berm - concrete - 12,000 gal capacity.
4 3,000 gal process tanks
12,000 gal new solvent 1980 - present
6,000 hi-flash
6,000 new solvent
Berm in good condition.

Yellow 500 gal tank - spent solvent from lab - wet screen Bldg 2. Accum. When full taken to forklift - drained into flake dryer pit. Every 2-3 wks transported. On asphalt floor outside.
Rubber hose 1980 -

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Solvent distillation unit

Spent M.S. 3,000 gal capacity tank outside building. Pumped into 300 gal tank. Surge tank for solvent distillation unit - 250 gals.
Will get rid of still bottoms.
One more 3,000 gal. tank outside will hold clean M.S.
Oil as heat source. Operational 15 Feb.
Concrete Floor indoors. Plan to put in a drum cleaning unit. Hook up a filter pan and evaporate. Pit will hold any release.
Almost completely automated. Low level probe - to trigger pumping of clean solvent
20 hrs to reclaim ≈ 3,000 gals 150 gals/hr.

3,000 gal. containment berm for outside tanks.

Swells are earthen - lead out to detention pond.
Wetland area - Sign up - reseeded & filled.
Detention pond - full of ice - looks clean.

Gearite waste grease from gears on ball mill.
Accum. in drum. Goes out as haz. waste.
Accum. slowly Nr. Bldg 2. Another satellite?
2 drums of grease.

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Cooling tower pits - concrete. Rope skimmer picks up oil & Al. Satellite drum for skimmer sludge.
Drops down conveyor.
Former ODSA. Atomized powder holding area.
Asphalt floor.

Sell furnace dross to Metalmart in Chicago for reclaiming
55 gal. drum - lid - taken to dock area. Truck comes in to pick up.
≈30 drums outside furnace building.

Empty drum storage. Crush & send out as scrap.
Stored on ground. Put in trailer

HWSA 6" high concrete berm on door. Open @ each end. Berm ½ way thru.

Pallets. Some 3-high stacks. Intact concrete floor
≈ 55 drums. All sealed. Look well-managed
Al dust + dirt on S end. No concrete
≈ 50% of building is concrete-floored.

Dec. 1991 soil samples for closure plan. Dames & Moore have soil sample results - are compiling report.

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By 15 Mar - must send results to VEPA
15 June or July for final closure.

Empty drums - hundreds waiting for disposal

WWTU Indoors - sound concrete floor
2x week sampling 1/month report submission
Separator → skimmed oil from the wastewater
is collected in 2 20-gallon drums & automat-
ically pumped into a 300 gal. oil tank.
Oil mainly from compressors. Local oil
reclaimer - get name & frequency.

H_2SO_4 pH adjuster - manual pH 6-10.
Pour H_2SO_4 in.
Open holding pond for treated water that
can't be taken by Joliet.
Clay lined. Doesn't look like it's been used.

Asphalt in both areas of wetland, S & N

Former baghouse
1986 - GE Industry disposed of PCBs at Pittsfield
Incinerator, MA 3 PCB transformers.
Left 3:40

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ATTACHMENT D

DAMES AND MOORE ENVIRONMENTAL ASSESSMENT

REPORT

ENVIRONMENTAL ASSESSMENT
ALCAN-TOYO ALUMINUM POWDER AND PIGMENT PLANT
JOLIET, ILLINOIS

FOR

ALCAN-TOYO AMERICA, INC.

D&M Job No. 17356-002-07
June 26, 1989

[ad89(4)(s)at1] **PRELIMINARY DRAFT**

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REPORT
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ALCAN-TOYO ALUMINUM POWDER AND PIGMENT PLANT
JOLIET, ILLINOIS
FOR ALCAN-TOYO AMERICA, INC.

1.0 SCOPE OF WORK

This report presents the findings of a site investigation conducted at the Alcan-Toyo Aluminum Powder and Pigment Plant in Joliet, Illinois. This investigation was performed pursuant to the scope of work presented in Dames & Moore's proposal dated February 13, 1989.

1.1 INTRODUCTION

The site is approximately 37 acres in size, and located at the northeast corner of Route 53 and Caton Farm Road in Joliet, Illinois. In general, the site property is bounded by open vegetated areas to the north, south and east, and by Route 53 to the west (Route 53 has a roadway surface elevation approximately 10 feet higher then that of the site property). The Des Plaines River is located approximately 450 feet east of the eastern property boundary, and is controlled by river retaining walls. Prior to 1960, the Alcan-Toyo property was used to manufacture coal gas by the Northern Illinois Gas Company. Evidence of former gasification operations in the form of structure foundation and coal tar residue, have been observed at several locations on site. The extent of potential contamination resulting from the former gasification practices was unknown, and therefore, Alcan-Toyo retained Dames & Moore to conduct a preliminary evaluation of the subsurface conditions.

1.2 STUDY OBJECTIVES

The principle objectives of this investigation were as follows:

- Assess the activities of former facilities that occupied the site to help determine potential sources, possibly responsible for the release of contaminants;

- Assess the types and concentrations of contaminants presented in the on-site soils; and

- Assess the types and concentrations of contaminants present in the on-site ground water.

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1.3 TASKS

To fulfill the above-mentioned objectives, the following tasks were accomplished:

Data Review

- o Review available literature including hydrogeologic data, and historical aerial photographs to provide information regarding the characteristics of the site hydrogeology and locations of former site structues; and

- o Identify and review site specific data to assess potential areas that may have come in contact with wastes generated by former practices conducted on site.

Site Assessment

- o Based on the results of data review, conduct an organic vapor analyzer (OVA) survey on areas with high potential of waste contamination generated by former practices;

- o Obtain composite soil samples for chemical analysis from selected areas on-site; and

- o Install shallow ground water monitoring wells near the locations of former structures and near property boundaries to chemically assess the condition of shallow ground water on-site and to identify the potential for off-site contaminant migration.

The remainder of this report describes the methods employed in completing these tasks and the results of the site investigation and characterization studies. The conclusions and recommendations of Dames & Moore are based on the results presented herein.

2.0 HISTORY REVIEW

2.1 FORMER SITE ACTIVITIES

In order to identify potential "hot spot' areas, Dames & Moore conducted an historical review to identify locations of former structures and to learn about former on-site gasification practices. This was accomplished by reviewing several historical aerial photographs obtained from years (1954, 1961 and 1975); reviewing available site specific information; and interviewing NI Gas employees who formerly worked at this location. A brief summary of the historical findings is described below.

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The plant was constructed by Northern Illinois Gas Company in 1912, and utilized the coal carbonization method of gas production from 1912 to 1921. This method consisted of cooking raw coal and/or coke in ovens or retorts to produce gas and various gas-by-products. Some of these by-products (i.e., coal tar) were distilled or refined when economically feasible, to yield marketable products such as benzen, xylene or naphthalene. When it was not economically feasible to refine these by-products, the coal tar and other nuisance wastes were typically disposed of in the easiest way possible (i.e., tar well, disposal pit, etc.). It was also common practice to dispose of on-site, the spent iron oxide used to remove hydrogen sulfide and cyanide from the manufactured gas. The iron oxide was typically mixed with wood chips or sawdust during the purification process, and can be identified by its prussion blue color characteristic of ferri-ferro cyanides.

In 1921, the method of gas production was changed to utilize the water gas method. The water gas method differs from the coal carbonization method in that steam is added to the gas as it passes through an incandescent bed of coke. Following the addition of steam, the water gas was typically enriched by adding gasses produced by the thermal cracking of oil. (Section 2.2 describes typical wastes associated with these gasification processes).

As natural gas became more abundant, manufactured gas was phased out. However during peak periods of gas usage, it was sometimes necessary to increase the volume of natural gas by adding to it a secondary gas (i.e., propane). Several propane tanks were housed at the Lockport facility for this purpose between 1950-1956.

The property was later purchased by Intercontinental Alloys (IA) who began a smelting operation on-site in 1971. IA utilized two secondary smelters to make secondary aluminum and foundry alloys, by melting scrap metal and blending it with silicon,. copper, zinc and other metal additives. Salt was also used to purify the molten metals.

In 1976, Alcan-Toyo purchased the northern half of the site property from IA, and in 1978 purchased the southern half. Alcan-Toyo then added a third furnace to supplement those buildt by IA.

2.2 POSSIBLE WASTES GENERATED BY COAL GASIFICATION

Typical wastes associated with these two gas producing methods in addition to a short description of possible environmental concerns posed by each waste, are described below:

Coal Carbonization

- Tar Sludge -- A heavy, resinous material usually containing a high percentage of solids. The primary constituent that poses an environmental concern are the polynuclear aromatic hydrocarbons (PAHs) which are generally immobile and relatively stable.

- Clinkers, Ash, and Coke -- These relatively stable by-products could impact the environment through the gradual leaching of trace metals.

- Fixed Salts of Cyanide, Ammonia, and Sulfur -- Those compounds, susceptible to rapid decomposition over time, resulted from the cleaning of coke oven gas. The compounds would generally be mixed with other wastes and would be generated in small quantities.

- Oil Sludges and Gas Condensates -- Those aromatic-rich compounds exhibit a fairly high degree of mobility.

- Contaminated Liquors -- These tar and ammonia liquors generally make the greatest impact immediately after disposal.

- Sulfur Removal Wastes -- The iron oxide purifiers produced wastes high in sulfur and cyanide which were generally disposed of on-site.

- Miscellaneous Sludges -- Small quantities of acid sludges, lime sludges, and caustic sludges may have also be generated that are associated with various gasification processes.

Water Gas

- Tar Sludges -- Relatively stable, they resulted from residual heavy hydrocarbons in the coke or resulted from the oil being injected into the gas.

- Ash and Clinkers -- Again, as with the coal carbonization, pose little concern other than leaching of trace elements.

- Purifier Wastes -- Characteristically blue due to the cyanides present, the spent iron oxide wastes generally were high in sulfur and cyanide.

- Petroleum Sludges -- The sludges resulted from introducing oil to the gas; these were typically disposed of on-site.

- Emissions and Contaminated Liquors -- These condensates would be rich in ammonia and hydrogen cyanide.

- o Lamp Black -- Small quantities of lamp black were generated when the oil was gasified. The carbon would periodically be collected and removed.

Based on the results of literature view, Dames & Moore proposed the following parameters be analyzed for the soil and ground water samples obtained from the site: cyanide, oil and grease, ammonia (N), phenol, sulfide, total solids, priority pollutant volatile organic compounds (VOCs), and base/neutral compounds and conductivity (for water samples only).

3.0 SITE ASSESSMENT

The site assessment program was conducted between May 1 and May 5, 1989, and included the following tasks.

- OVA survey
- soil sampling and chemical analysis
- monitoring well installation
- water sampling and chemical analysis
- visually determine the lateral extent of coal tar contamination

Following are the detailed description of each task.

3.1 OVA SURVEY

An organic vapor analyzer (OVA) survey was conducted in various locations throughout the site based on the results of literature and data view. The purpose of this survey was to investigate for evidence of gross contamination and to aid in the placement of borings constructed for soil and water sample collection for chemical analysis. The study areas are identified below, and illustrated on Plates 1 and 2.

- o Area 1: near former benzole building (immediately north of existing engineering and maintenance trailer)
- o Area 2: southeast of former gas holders (downgradient of former gas holder)
- o Area 3: east of building 3B
- o Area 4: west of coke ovens

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o Area 5: east of buildings 6A, 6B, 7 and 8

The OVA is a field instrument designed to measure trace quantities of volatile organic vapors from compounds that are typically lighter than No. 2 fuel oil. The volatile concentrations, which can be measured in a range of 0-1,000 ppm, are a summary of all the VOCs detected and provide an indication that contaminants may be present. However, this measurement does not provide a direct indication of the quantity of VOC contaminants that may be present in a nongaseous phase.

Since the OVA was not fitted to differentiate between naturally occurring organic vapors (e.g., methane) and those associated with other organic compounds, consideration must be given to naturally occurring background concentrations. Based on past experience with the OVA at numerous job sites, the following breakdown of OVA measurements may be used as a very general rule of thumb:

0 to 10 ppm: Background concentrations; probably due to natural sources.

10 to 50 ppm: Suspect; may indicate trace quantities of contaminants are present in the soil.

50+ ppm Probable contamination; higher OVA readings are generally proportional to increased concentrations of VOCs in the soil.

The OVA survey boreholes were advanced to bedrock in an effort to detect apparent signs of contamination (e.g., odor, stain, oil) as well as the presence organic vapors. Immediately following borehole completion, the OVA probe was placed into the borehole and a measurement was recorded.

3.2 MONITOR WELL LOCATIONS AND INSTALLATION PROCEDURES

In our proposal dated February 13, 1989, Dames & Moore proposed to install seven shallow ground water monitoring wells that would be positioned on top of the underlying bedrock. The locations of these monitoring wells were based on information learned during the historical review, and are shown on Plate 2 as MW-1 through MW-7.

During the field investigation it was found that the overall depth to bedrock ranged from 2 to 25(+) feet below grade, and in areas near MW-2, MW-3 and MW-4 was too shallow to accommodate a monitor well. Also, ground water was not encountered in the vicinity of proposed well locations 3 and 4. Therefore, these wells were not installed, and the field program was adjusted by collecting additional soil and surface water samples to conform to the unexpected adjustments. A representative ground water sample was collected however from the MW-2 vicinity as ground water was encountered in this location. The methods used to collect this sample are described in Section 3.3.

All proposed monitor well boreholes were continuously sampled using a standard 18-inch split spoon sampler advanced by a truck-mounted drill rig, until bedrock was encountered.

If the depth to bedrock was at least 8 feet deep, the borehole was further advanced (approximately 1 foot) through weathered bedrock until competent bedrock was reached. After competent bedrock was reached, the solid stem flight augers were removed from the borehole and a well screen and riser pipe(s) were installed in boreholes MW-1, MW-5, MW-6 and MW-7. The void space in the annulus surrounding the screen was filled with clean silica sand to a depth of approximately 6-inches above the top of the screen. The remaining void space in the annulus was filled with at least 1-foot of bentonite seal followed with a bentonite/cement grout to the ground surface. A locking protective steel pipe was placed over the well and pushed into the grout with the drill rig until the top of the well stick-up was just below the top of the protective casing. The casing was then grouted into place, and a rainwater run-off pad was created by mounting additional grout around the base of the casing. Finally all well protective casings were locked and the cement allowed to cure before well development.

Prior to well installation, all well materials and measuring devices were thoroughly steam cleaned. The well materials consisted of 2-inch diameter, 5-foot long stainless steel screen and galvanized steel riser pipes. At the completion of monitoring well installation, the surveyor, Ruettiger, Tonelli & Associates, Inc., of Joliet, Illinois was retained to determine the monitoring well elevations to an accuracy of .01 foot vertical. The surveying results are presented in Appendix A.

3.3 WATER SAMPLING AND ANALYSIS

All installed monitoring wells were bailed until the water being purged from the well ran as clear as practicable following an approximate 24-hour grout curing period. Following well development, and prior to ground water sampling, approximately three well volumes of water were purged from the wells to ensure a representative ground water sample would be collected. A Teflon® bailer was used to purge the well and gather water samples.

Since the shallow depth to bedrock in the vicinity of MW-2 restricted the installation of a monitor well, a ground water sample was collected in the following manner: a temporary PVC well screen was placed into the open borehole, and bailed several times with a Teflon® bailer to ensure a representative ground water sample

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would be collected. After the ground water had been bailed approximately 10 times a ground water sample was collected.

All sampling and purging tools (i.e., water level measuring device and bailer) were decontaminated before placement into each well, using a thorough Alconox® water wash followed by several distilled water rinses. Ropes used to lower bailers into the wells became dedicated to a specific well to simplify purging/sampling and to prevent the possibility of cross-contamination.

Water samples were also obtained from the drainage ditch located in front of the Engineering and Maintenance trailer and the detention pond located at the northeast corner of the plant site. All of the collected water samples were analyzed for cyandide, oil and grease, ammonia (N), phenol, sulfide, conductivity, volatile organic compounds (VOCs) and base/neutrals.

All water samples were placed in labeled laboratory containers and packed in an iced cooler with insulation placed between the bottles to prevent breakage. The samples were delivered to the analytical laboratory (NET Midwest, Inc., Bartlett, Illinois) by a Dames & Moore representative within 24 hours of sample collection. Chain-of-custody procedures were followed.

3.4 SOIL SAMPLING AND ANALYSIS

Composite soil samples were obtained from each proposed monitoring well borehole (MW-1 through MW-7) using a standard 18-inch split spoon sampler. Composite soil samples were also obtained from Borings B-3, B-9, B-18, B-25, and B-29, based on either OVA results, or visual signs of contamination. Locations of all boreholes are shown on Plate 2.

The sampling tools were decontaminated after each sample was collected by a thorough Alconox® water wash followed by several distilled water rinses. All soil samples were retained in insulated ice chests until delivery to the analytical laboratory (NET Midwest, Inc., Bartlett, Illinois). Chain-of-custody procedures were followed.

A Dames & Moore engineer/hydrogeologist logged each borehole and documented obvious signs of contamination (e.g., soil discoloration, odors, texture, staining, etc.).

Soil samples obtained from the same borehole were thoroughly mixed and composited in the laboratory prior to analysis. All composite soil samples were analyzed for cyanide, fat, oils and grease (FOG), ammonia (N), phenol, sulfide, total solids, volatile organic compounds (VOCs), base/neutrals.

3.5 DETERMINING THE LATERAL EXTENT OF COAL TAR CONTAMINATION

Adjacent to the north side of the Engineering and Maintenance trailer, evidence of coal tar residue can be seen scattered throughout the open area. Twenty-five soil borings were probed in this area (Area 1) to visually determine the lateral extent of coal tar contamination. In general, the coal tar contamination extended from the ground surface to a maximum depth of 4.5 feet. Through visual observation, the area with obvious evidence of coal tar residue in the soils is delineated on Plate 2. Since the subsoils in Area 1 consisted of black to dark brown clayey sand or sandy clay underlain by weathered bedrock, it was difficult to visually delineate the extent of actual contamination and therefore the outlined area on Plate 2 is a generalized estimate.

4.0 OVA SURVEY RESULTS/SUBSURFACE CONDITIONS

4.1 AREA 1: AREA NEAR FORMER BENZOLE BUILDING (EXISTING ENGINEERING AND MAINTENANCE BUILDING)

The OVA readings detected in this area range from 2.8 ppm to greater than 1000 ppm. In general, the subsoil encountered in this area consisted of black to dark brown sandy clay, or clayey sand overlying brown to gray clay. Bedrock was encountered at depths ranging from 2.5 feet to 9.5 feet with the exception of boring MW-1 where weathered bedrock was encountered at an approximate depth of 14 feet.

The soils within the area containing evidence of coal tar residue, appeared to be oily with a strong petrochemical odor. As related by plant personnel, it was common to see coal tar residue seeping out of the ground during periods of hot weather. A composite soil sample and a water sample were obtained from boring MW-2 for analysis. Monitoring well MW-1 was installed at the north boundary of the area. See Plate 2 for sampling locations.

4.2 AREA 2: NEAR FORMER GAS HOLDER LOCATIONS

Based on a review of aerial photographs, it was apparent that all gas holders were removed prior to the 1975 photo. Boring MW-3 was drilled at an approximate location between two former gas holders. The subsoils consisted of approximately 2 feet of ash mixed with coal pieces overlying weathered bedrock. Ground water was not encountered in this boring during drilling and a composite soil sample was obtained for chemcial analysis.

Boring MW-4 was drilled near the middle section of the south property line. The subsoils consisted of approximately 7 feet of dark brown sandy clay fill

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containing wood and brick pieces, overlying dolimite bedrock. Ground water was not encountered in this borehole during drilling. For OVA survey purposes, ten additional borings (borings B-1 and B-10) were probed between Boring MW-3 and MW-4. The OVA readings in these borings ranged from 10 ppm to greater than 1000 ppm. The subsoils consisted of black to dark brown sandy clay fill overlying bedrock, which ranged from 3.5 feet to approximately 7.3 feet. One composite soil sample was obtained from borings B-3 and B-9 for chemical analysis.

4.3 AREA 3: EAST OF BUILDING 3B

The ten OVA survey borings advanced in this area yielded measurements that ranged from below detection to 45 ppm. The subsoils consisted of a thin layer of black clayey sand fill overlying brown sandy gravel. The brown sandy gravel appeared to be natural soil. Beneath the sandy gravel, possible dolomite bedrock was encountered at depths ranging from 4 feet to 8 feet with the exception of Boring B-12 where a hard clay layer was encountered to the maximum depth drilled, 25 feet. A composite soil sample was obtained from Boring B-18 for chemical analysis. Most of the borings were dry during drilling in this area.

4.4 AREA 4: WEST OF COKE OVEN

Nine soil borings were drilled in an area that yielded OVA readings that ranged from 0 to 10 ppm. In general the subsoils encountered in these borings consisted of black clayey sand or sandy clay fill underlain by a thin layer of brown sandy gravel. Bedrock was encountered at depths ranging from 4.0 to 7.5 feet beneath the fill materials or brown sandy gravel. Scattered greenish-blue wood and metal pieces were observed on the ground surface in this area.

Oily soils were encountered immediately above bedrock in Boring MW-6 and B-22A. Borings B-22B through B-22E were drilled an approximate distance of 5 to 9 feet from MW-6 and B-22A, for purposes of identifying the lateral extent of the oily soils. Oily soils were not encountered in these four borings, and a monitoring well was installed in boring MW-6. Two composite soil samples were obtained from borehole MW-6; one from the upper black clayey sand fill and one from the black oily sandy gravel.

4.5 AREA 5: EAST OF BUILDINGS 6A, 6B, 7 AND 8

This area is surrounded by a water detention pond to the north and northeast. Nine soil borings were drilled in this area that yielded OVA readings ranging from 4 ppm to 66 ppm. In general, the subsoils encountered in these borings consisted of mixed black and brown clayey gravel, clayey sand or sandy clay fill overling bedrock. Bedrock was encountered at depths ranging from 2 feet to 9.5 feet.

Composite soil samples were obtained from boring MW-7, B-25 and B-29, respectively. Ground water was encountered in borings located closest to the detention pond (MW-7 and B-32) and one monitoring well was installed in boring MW-7.

5.0 ANALYTICAL RESULTS

Composite soil samples and water samples were obtained and analyzed for the parameters discussed in Section 3. A summary of the analytical results are presented in Tables 1 through 4; complete analytical results are presented in Appendix B.

5.1 SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES

Tables 1 and 2 and Plate 5, provide a summary of the analytical results compiled for all analyzed soil samples.

5.1.1 Cyanide

Cyanide was detected in all soil samples with the exception of that obtained from MW-1. The concentrations of cyanide ranged from 0.52 µg/g to 34.7 µg/g; the latter concentration having been collected from 0 to 5 feet in MW-6. As previously mentioned, blue stained woodchips indicative of ferri-ferro cyanides were observed in the MW-6 vicinity. This form of cyanide is relatively stable.

5.1.2 Fats, Oil and Grease (FOG)

Analysis of FOG in soil samples provide a measure of non-volatile organics that are heavier than No. 2 fuel oil, including petroleum liquids, animal fats, vegetable oils, waxes, soaps, greases, etc. Although the State of Illinois has not established generic remediation standards for FOG in soils, the values are indicative of the amount of these types of contaminants that have been released into the subsurface. Values of FOG presented in the attached tables are given as a percentage, and range from below detection (MW-1) to 1.24 percent (12,400 ppm). The latter concentration was obtained from a soil sample composited from borings B3 and B-9, located in Area 2 near the former gas holders.

5.1.3 Ammonia (N)

Ammonia is a by-product of coal distillation, and was often sold in the form of fixed ammonia salt to the farming industry for soil fertilizer. The concentrations of ammonia on-site range from below detection (0.4 µg/g) observed in soil sample MW-7, to an elevated level of 838 µg/g observed in soil sample MW-2 collected in the vicinity of the tar ooze.

5.1.4 Phenol

Phenols are a class of synthetic hydrocarbons containing a benzene ring structure. Some phenolic compounds are suspect carcinogens. The most toxic phenols are the halogenated compounds, particularly the chlorinated phenols. Phenol concentrations detected in on-site soil samples range from below detection (B-25) to 104.3 µg/g (MW-2).

5.1.5 Sulfide

Sulfide is also a by-product of coal gasification resulting from gas purification. The concentration of sulfide detected within the soil samples ranged from 0.5 µg/g (MW-1) to 145.0 µg/g. This latter concentration was detected within MW-6 at 5 to 8 feet below grade. Again, the presence of sulfide is probably due to the disposal of spent iron oxide within the MW-6 vicinity. Iron oxide was typically used to remove hydrogen sulfide and cyanide from coal gas. The second highest sulfide concentration was 39.0 µg/g, detected at MW-2; concentrations detected in all other soil samples were below 10 µg/g.

5.1.6 Volatile Organic Compounds (VOCs)

All soil samples were analyzed for priority pollutant volatile organic compounds (VOCs) by EPA Methods 8240 and 5030. Only one soil sample (MW-2) was found to contain concentrations of VOCs. The detected parameters were: benzene (17.5 µg/g), ethyl benzene (12. µg/g), toluene (16.6 µg/g) and total xylenes (25 µg/g). All of these compounds are typical distillation products of raw coal tar or "benzol". Because boring MW-2 was located near the former benzole building, these compounds are probably the result of benzol refinement. Cleanup objectives, as determined by the Illinois EPA (IEPA) are determined on a "site specific" basis, however according to the IEPA baseline fuel cleanup objective, the baseline objectives are as follows: benzene, .005 µg/g; ethylbenzene, .68 µg/g; toluene, 2.0 µg/g; and total xylenes .44 µg/g.

5.1.7 Base/Neutral Compounds

All soil samples were analyzed for priority pollutant base/neutral compounds by EPA Methods 8270 and 3540. Priority pollutant base/neutrals were detected in most of the soil samples obtained from the plant site with the exception of those collected from borings MW-6 and B-18. Total concentrations of detected base/neutrals ranged from 1.7 µg/g to 49,700 µg/g and were detected in the following samples: Mw-2 (49,700 µg/g), B-29 (7030 µg/g), MW-3 (245 µg/g), B-3/B-9 (192 µg/g), MW-5 (84 µg/g), B-25 (75 µg/g), MW-4 (43 µg/g), and MW-7 (20 µg/g) as presented in Table 1. Table 2 summarizes the detected base/neutral compounds and VOCs for soil the IEPA's baseline fuel cleanup objectives, the detected concentrations observed at MW-2 and MW-6, exceed the general cleanup objectives.

6.0 SITE HYDROGEOLOGY

The monitoring wells were surveyed by a local surveyor to an accuracy of 0.1 foot vertical. Due to the shallow bedrock formation and the dry overburden soils encountered during drilling in most areas, only four monitoring wells were installed. It is difficult to accurately estimate the direction of ground water flow in the zone overlying the bedrock; based on limited ground water information. However, it appears that the ground water gradient in this shallow zone is to the east - southeast, toward the Des Plaines River.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

- Through reviewing aerial photographs and historical data, we understand that the Alcan-Toyo facility is constructed on the site of a former coal gasification plant. Two coal gasification methods were used during production: coal carbonization and water gas method. Possible contaminants generated during the gasification process are cyanide, oil and grease, ammonia (N), phenol, sulfide, volatile organic compounds and base/neutrals.

- Based on the data review, six areas were studied during the investigation. The investigation included an OVA survey, followed by the installation of monitoring wells, soil and water sampling, and a visual delineation of the coal tar ooze.

- During field exploration, it was observed that the site was covered by fill materials overlying shallow dolomite bedrock. Thin layers of brown sandy gravel were also observed at some locations overlying bedrock. Average overburden soil thickness is approximately 6 feet.

- Area 1 (near the former benzole building): concentrations of analyzed parameters were found to be higher at this location then elsewhere on site. For example a total concentration of base/neutrals at 49,700 µg/g, was detected in a composite soil sample obtained from this area. A ground water sample (MW-2) collected within this visually contaminated area also contained detected levels of cyanide, ammonia (N), phenol, VOCs and base/neutrals. Most of the detected concentrations were found to exceed the Illinois General Water Standards.

- Two surface water samples were obtained from the drainage ditch and detention pond. Only concentrations of cyanide were found to slightly exceed the Illinois General Standards for non-potable water for each sample.

- It appears that the ground water gradient in the zone above the bedrock migrates toward the Des Plaines River in an east by southeast direction.

- Monitoring Well MW-1 was installed near the west property line which is estimated to be hydraulically upgradient of the plant site. All parameters analyzed were below detection limit or below the Illinois General Standards for non-potable water.

- Monitoring Well MW-5 was installed near the east property line which is downgradient of major plant areas. The analytical results indicate that the ground water may contain cyanide with concentrations exceeding the Illinois General Water Standards for non-potable Water. Other parameters analyzed are below the general standards or below detection. With this limited information, it is our opinion that the contaminants detected on site were generated by the former coal carbonization operation.

7.2 RECOMMENDATIONS

In general three areas appear to be of concern due to the high concentrations of detected base/neutral compounds. These areas are those located near MW-2, MW-7/B-29 and MW-3. All other areas appear to be of lesser concern. Although base/neutral compounds are considered to be relatively immobile, many of them are believed to be carcinogenic. Therefore their presence on site may pose some risk. From information gained through this investigation it appears that these areas of concern may be isolated, however additional sampling would be necessary to confirm this assumption. We therefore recommend additional sampling/chemical analysis in areas of concern, to help define the lateral and vertical extent of contamination, and evaluate potential remedial alternatives if required.

--ooOoo--

The following Table, Plates and Appendices are attached as part of this report.

Table 1 Summary of Analytical Results for Soil Samples.

Table 2 Summary of Detected VOCs and Base/Neutrals for Soil Samples.

Table 3 Summary of Analytical Results for Water Samples.

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TABLE 1

SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES

PARAMETERS	UNIT	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6 1'-5'	MW-6 5'-8'	MW-7	B-3 1'-5' B-9 1'-6'	B-18	B-25	B-29 0'-5'
Cyanide, Total	µg/g	BDL	0.52	25.2	4.02	4.72	34.7	13.3	0.86	7.45	3.2	23.3	9.4
FOG	%	BDL	BDL	0.0094	0.051	0.0069	0.016	0.132	0.009	1.24	0.045	0.09	1.07
Ammonia, (N)	µg/g	20.1	838	15.6	8.9	55.5	27.8	16.8	BDL	27.8	13.6	4.8	22.4
Phenol	µg/g	0.22	104.3	0.4	0.37	0.14	4.75	0.14	BDL	0.63	0.17	BDL	0.87
Solids, Total	%	80.18	72.16	85.27	81.60	70.64	81.85	83.02	71.05	71.88	86.47	84.19	70.21
Sulfide	µg/g	0.5	39.0	1.2	1.3	0.6	6.5	145.0	7.5	2.4	9.4	9.0	1.9
VOCs	µg/g	BDL	60.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Base/Neutrals	µg/g	1.7	49,700.	245	43	84	BDL	BDL	20	192	BDL	75	7030

PRELIMINARY DRAFT

TABLE 2

SUMMARY OF DETECTED VOCs AND BASE/NEUTRAL'S FOR SOIL SAMPLES

VOCs	ILLINOIS BASELINE FUEL CLEANUP OBJECTIVE	MW-1	MW-2	MW-3	MW-4	MW-5	MW-7	B-3 B-9	B-25	B-29
Benzene	0.005	BDL	17.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ethyl benzene	0.68	BDL	1.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Toluene	2.0	BDL	16.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Xylene	0.44	BDL	25.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL
BASE/NEUTRAL										
Acenaphthylene		BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	600
Anthracene		BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	400
Benzo(a)anthracene		BDL	3000	18.	BDL	BDL	1.0	15.	BDL	1900
Benzo(b)fluoranthene		BDL	3100	22.	BDL	BDL	3.0	BDL	11.0	180.
Benzo(k)fluoranthene		BDL	3500	19.	BDL	BDL	3.0	BDL	12	220.
Benzo(a)pyrene		BDL	3600	25.	BDL	BDL	2.0	BDL	10	350.
Benzo(ghi)perylene		BDL	BDL	34.	BDL	BDL	3.0	21.	BDL	430.
Chrysene		BDL	2900	23.	BDL	13	BDL	16.	BDL	200.
Fluoranthene		BDL	9900	25.	16.	21	3.0	41.	15.	940.
Fluorene		BDL	3300	BDL	BDL	BDL	BDL	BDL	BDL	370.
Indeno(1,2,3-cd)pyrene		BDL	BDL	22.	BDL	BDL	2.0	15.	BDL	180.
Naphthalene		BDL	BDL	BDL	BDL	BDL	BDL	10.	BDL	310.
Phenanthrene		BDL	12,500	16	13	26	BDL	39.	11.	1260
Pyrene		1.7	7,900	41	14	24	3.0	35.	16.	1400.

NOTE: All units = µg/g

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TABLE 3

SUMMARY OF ANALYTIC RESULTS FOR WATER SAMPLES

PARAMETERS	UNIT	GENERAL STANDARD FOR THE WATER OF STATE OF ILLINOIS	MW-1	MW-2	MW-5	MW-6	MW-7	DRAINAGE DITCH	DETENTION POND(NE)
Conductivity	umhos/cm	--	978	1140	5220	1500	5330	978	870
Cyanide, total	mg/l	0.025	0.018	0.398	0.137	1.55	0.176	0.027	0.032
FOG	mg/l	--	4	10.	6.	3.	4.	6.0	1.0
Ammonia, (N)	mg/l	1.5	0.65	2.60	0.59	1.72	6.04	0.25	0.29
Phenol (0.002)	mg/l	0.1	BDL	11.8	0.009	0.008	0.007	BDL	BDL
Sulfide (0.01)	mg/l	--	32.	0.8	BDL	22.	BDL	BDL	BDL
VOCs	ug/l		BDL	2766	BDL	8.1	BDL	BDL	BDL
Base/Neutral	ug/l		BDL	1144	BDL	51	BDL	BDL	BDL

NOTE = (0.01) means detection limit 0.01 mg/l

PRELIMINARY DRAFT

TABLE 4

SUMMARY OF DETECTED VOCs AND BASE/NEUTRALS IN WATER SAMPLES

	ILLINOIS BASELINE CLEANUP OBJECTIVES	MW-2	MW-6
VOCs			
Benzene	5.	1670.	BDL
Ethyl benzene	680.	123.	BDL
Toluene	2000.	501.	BDL
Xylenes, total	440.	472.	8.1
BASE/NEUTRALS			
Acenaphthene		178.	25.
Acenaphthylene		171.	13.
Fluoranthene	2.3 (total)	107.	BDL
Fluorene		281.	13.
Phenanthrene		407.	BDL

Note: Unit = µg/l

PRELIMINARY DRAFT

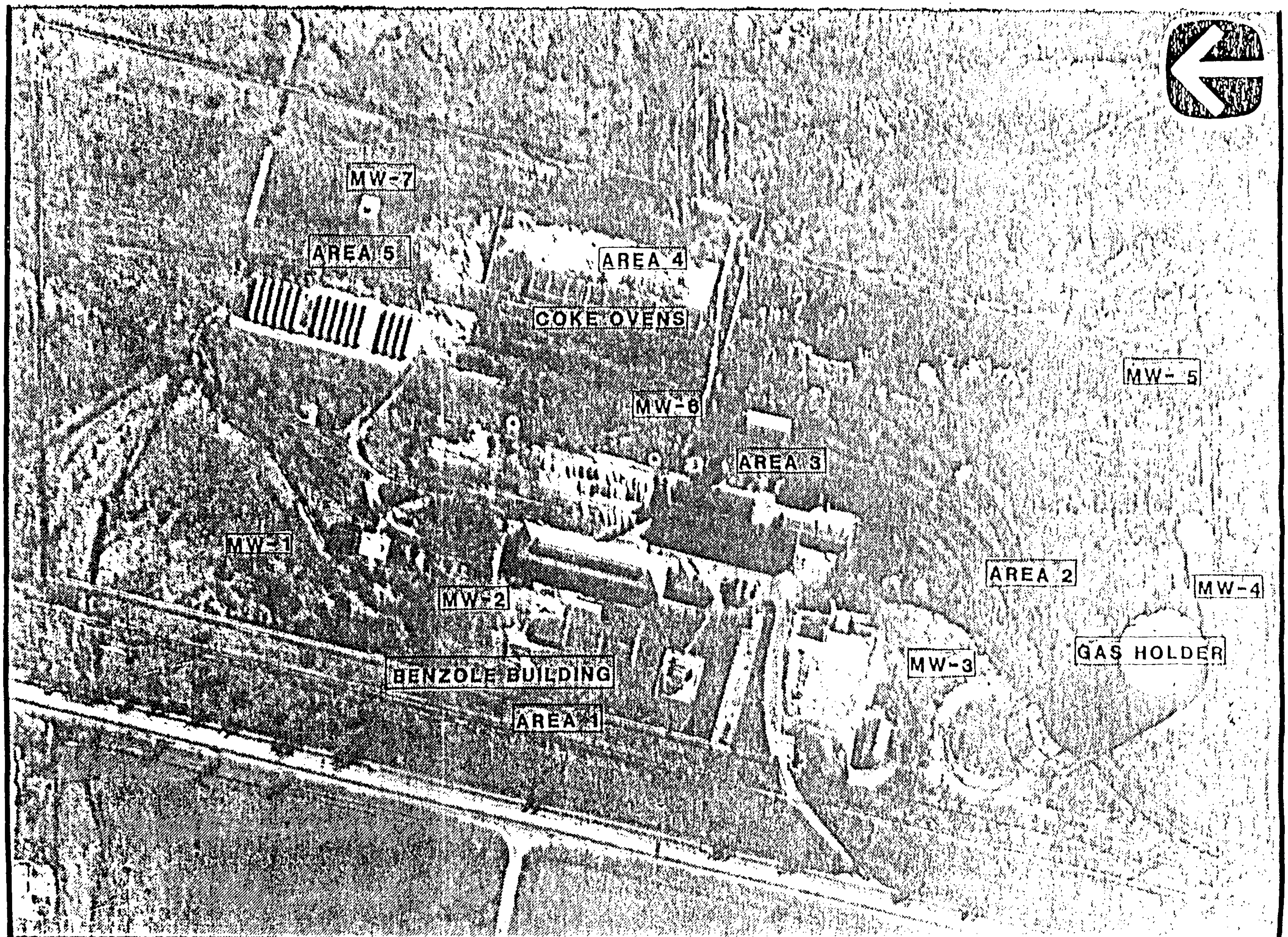
TABLE 5

GROUND WATER LEVEL DATA

WELL No.	WATER LEVEL (ft)	GROUND SURFACE ELEVATION (ft)	WATER LEVEL ELEVATION (ft)
MW-1	3.2	566.4	563.2
MW-5	3.5	556.4	552.9
MW-6	5.3	561.7	556.4
MW-7	3.3	559.9	556.6

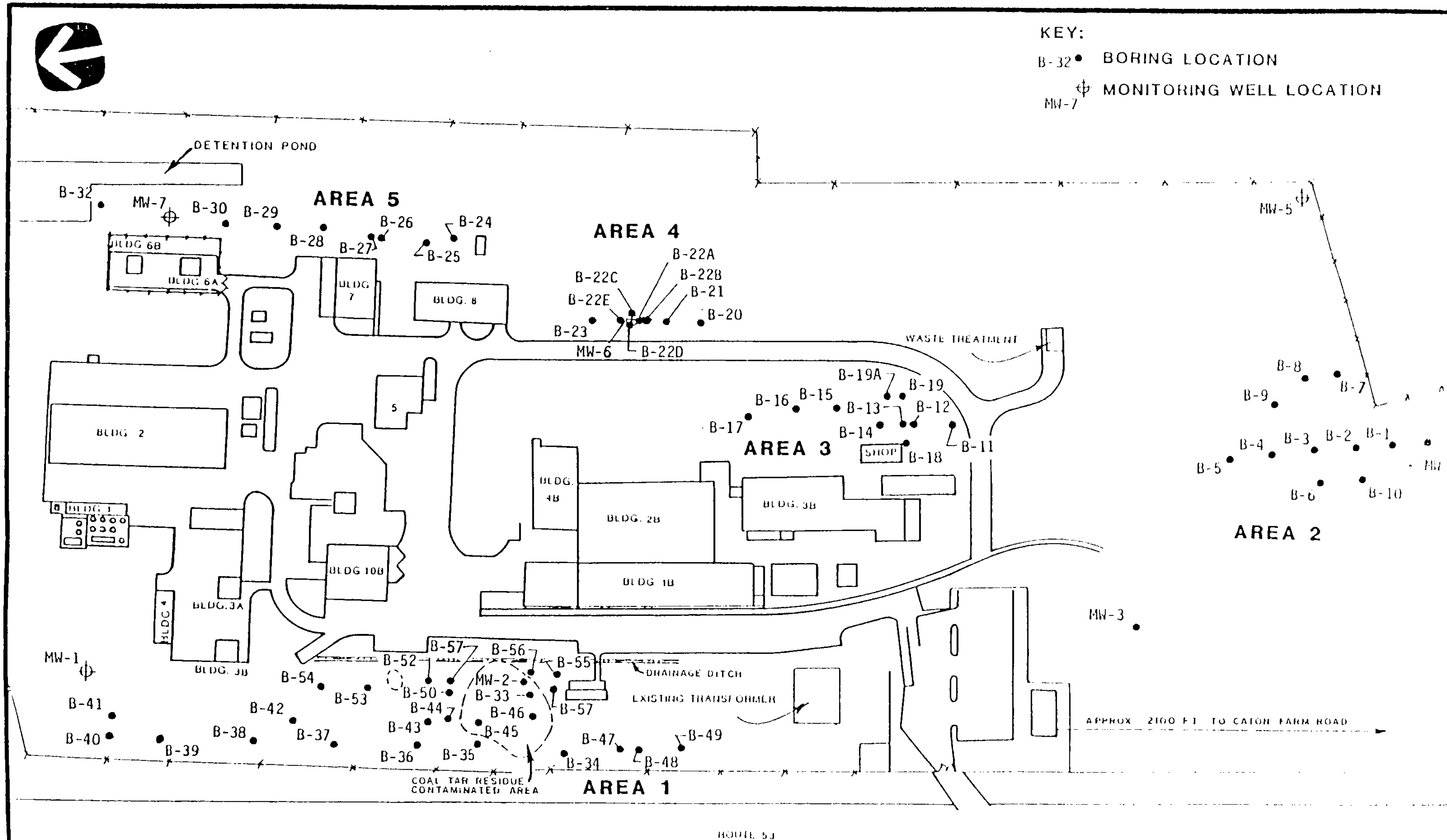
NOTE: Ground water level measured on May 10, 1989

PRELIMINARY DRAFT



PRELIMINARY DRAFT

PLATE 1
AERIAL PHOTOGRAPH OF PLANT SITE (1961)

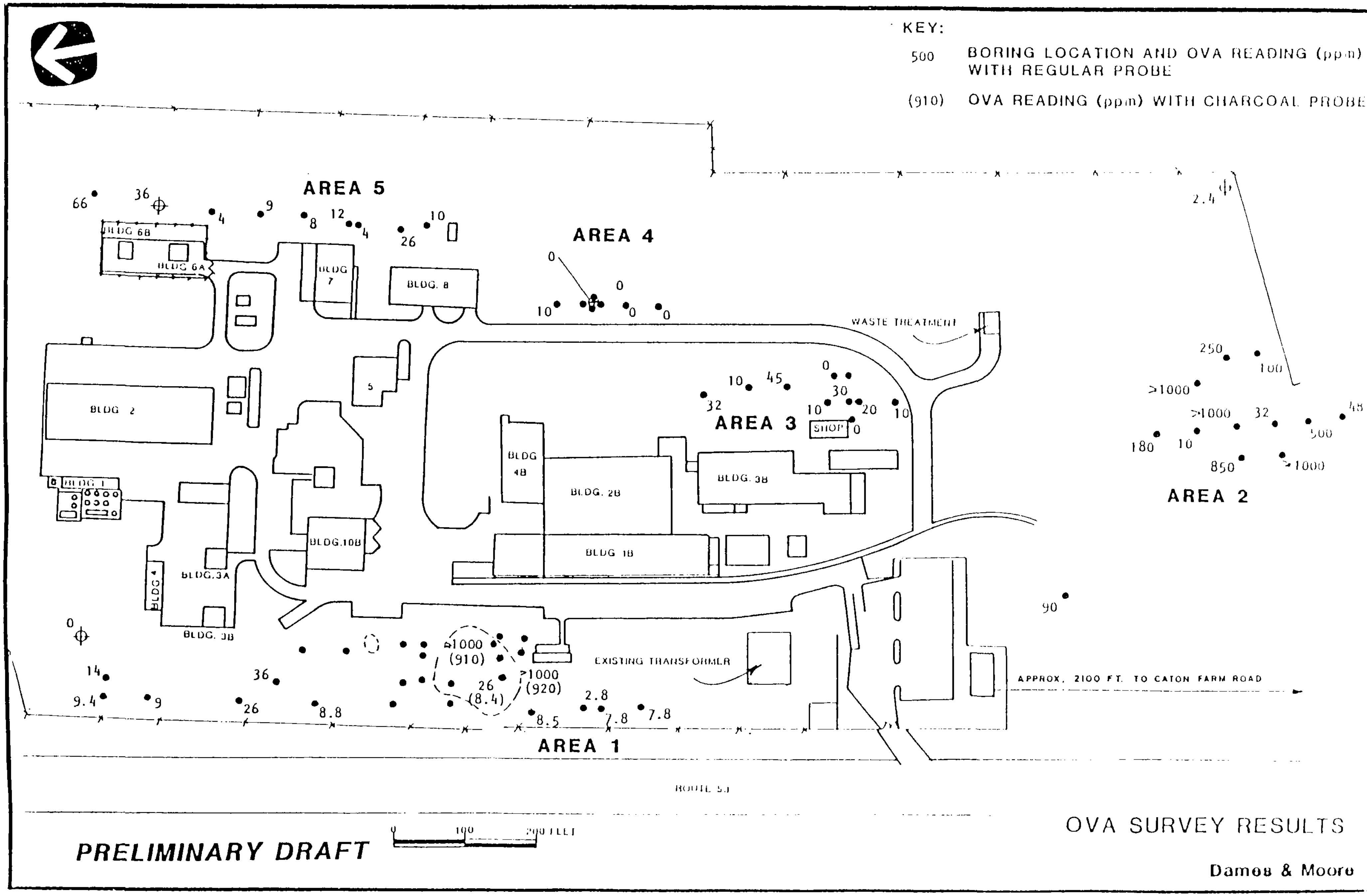


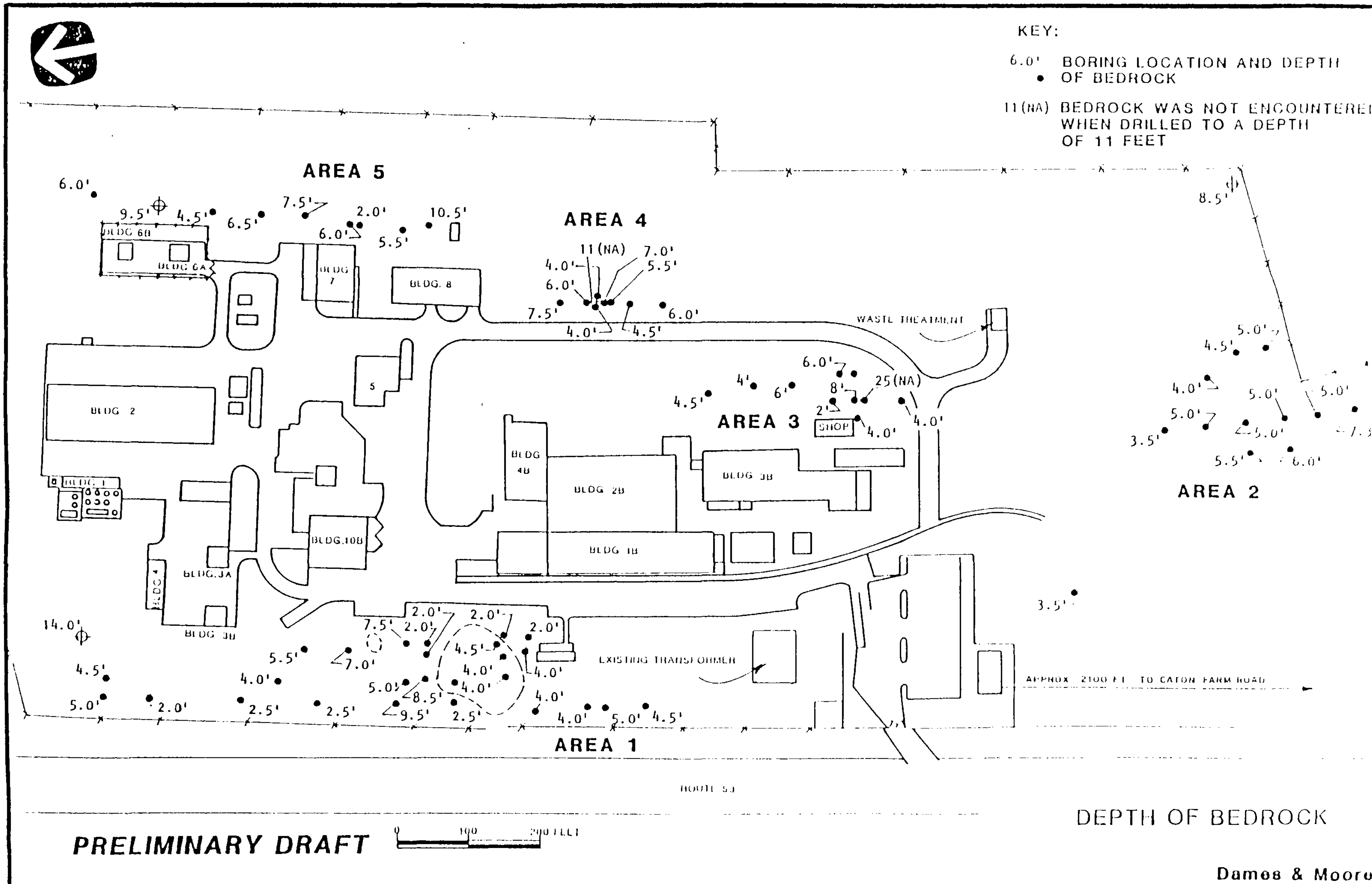
PRELIMINARY DRAFT

BORING LOCATION PLAN

Dames & Moore

PLATE 2

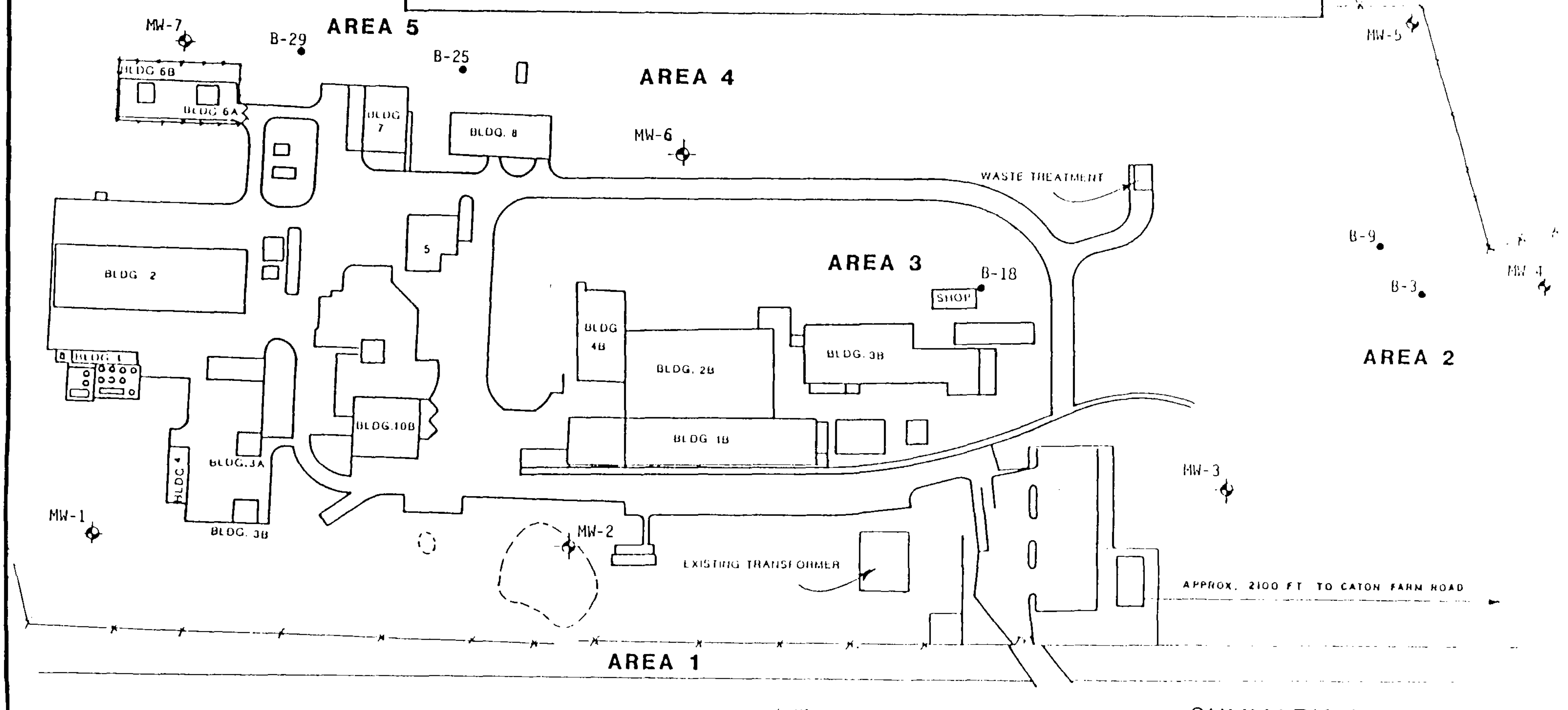

KEY:
500 BORING LOCATION AND OVA READING (ppm) WITH REGULAR PROBE
(910) OVA READING (ppm) WITH CHARCOAL PROBE
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
BLDG 6B
BLDG 6A
BLDG 7
BLDG. 8
BLDG 2
BLDG 1
BLDG 4
BLDG. 3A
BLDG. 3B
BLDG. 10B
5
BLDG 4B
BLDG. 2B
BLDG 1B
BLDG. 3B
SHOP
WASTE TREATMENT
EXISTING TRANSFORMER
APPROX. 2100 FT. TO CATON FARM ROAD
0 100 200 FEET
PRELIMINARY DRAFT
OVA SURVEY RESULTS
Dames & Moore
PLATE 3



KEY:
6.0' • BORING LOCATION AND DEPTH OF BEDROCK
11(NA) BEDROCK WAS NOT ENCOUNTERED WHEN DRILLED TO A DEPTH OF 11 FEET
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
BLDG 2
BLDG 2B
BLDG 1B
BLDG 3B
BLDG 4B
BLDG. 8
BLDG 7
BLDG 6B
BLDG 6A
BLDG.10B
BLDG.3A
BLDG 3B
BLDG 4
BLDG 1
SHOP
WASTE TREATMENT
EXISTING TRANSFORMER
APPROX. 2100 FT. TO CATON FARM ROAD
ROUTE 53
0 100 200 FEET
PRELIMINARY DRAFT
DEPTH OF BEDROCK
Dames & Moore

PLATE 4

PARAMETERS	UNIT	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6 1'-5'	MW-6 5'-8'	MW-7	B-3 1'-5'	B-9 1'-6'	B-18	B-25	B-29 0'-5'
Cyanide, Total	µg/g	BDL	0.52	25.2	4.02	4.72	34.7	13.3	0.86	7.45		3.2	23.3	9.4
FOG	%	BDL	BDL	0.0094	0.051	0.0069	0.016	0.132	0.009	1.24		0.045	0.09	1.07
Ammonia, (N)	µg/g	20.1	838	15.6	8.9	55.5	27.8	16.8	BDL	27.8		13.6	4.8	22.4
Phenol	µg/g	0.22	104.3	0.4	0.37	0.14	4.75	0.14	BDL	0.63		0.17	BDL	0.87
Solids, Total	%	80.18	72.16	85.27	81.60	70.64	81.85	83.02	71.05	71.88		86.47	84.19	70.21
Sulfide	µg/g	0.5	39.0	1.2	1.3	0.6	6.5	145.0	7.5	2.4		9.4	9.0	1.9
VOCs	µg/g	BDL	60.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL		BDL	BDL	BDL
Base/Neutrals	µg/g	1.7	49,700.	245	43	84	BDL	BDL	20	192		BDL	75	7030



0 100 200 FEET

PRELIMINARY DRAFT

SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES

Dames & Moore

PLATE 5

ATTACHMENT E

O'BRIEN AND GERE ENGINEERS, INC.
SUMMARY OF ENVIRONMENTAL DATA

SUMMARY OF ENVIRONMENTAL DATA

ALCAN-TOYO AMERICA
LOCKPORT, ILLINOIS

PREPARED BY:
O'BRIEN & GERE ENGINEERS, INC.
5000 BRITTONFIELD PARKWAY
SYRACUSE, NEW YORK 13221

1.0 PURPOSE

The purpose of this summary is to present environmental data on soil and ground water sampling conducted at the Alcan-Toyo America site in Lockport, Illinois. This overview will also summarize the effort underway regarding the clean-up of benzene contaminated soil in a limited portion of the site.

2.0 OVERVIEW OF THE SITE

As shown in Figure 1, the site has been divided into 4 areas. These areas have been the focus of previous investigations at the site.

3.0 SUMMARY OF SOIL SAMPLING

Area A - Near the former benzol building, possible former tar well (coal tar storage area)

Soil contains detectable concentrations of organics:

- Leachable benzene in excess of regulatory levels (soil and coal tar from this area is classified as hazardous waste).
- Base/neutral organics as high as 50,000 ppm.
- Phenols as high as 104 ppm.
- Naphthalene as high as 4,100 ppm.

The soil also contains detectable concentrations of cyanide and ammonia.

Area B - Near water detention pond

- Soil contains detectable concentrations of organics with base/neutral organics as high as 7,030 ppm.
- Soil also contains detectable concentrations of phenols, trichloroethylene, cyanide, and ammonia.

Area C - Downgradient of the former gas holders

- o Soil contains detectable levels of organics - base/neutral organics as high as 300 ppm.
- o Soil also contains detectable concentrations of phenols, cyanide, and ammonia.

Area D - Possible location of a former tar well

- o Contains materials similar in appearance and odor to coal tar found in Area A.
- o Soil contains detectable concentrations of base/neutral organics, phenols, cyanide, and ammonia.

4.0 SUMMARY OF AREA A CLEANUP

Figure 2 shows the extent of the coal tar contamination found in Area A.

- o Analytical results show the coal tar and soil exceeds the regulatory level for leachable benzene - soil is hazardous by RCRA Toxicity Characteristic.
- o Drainage system - installed to intercept ground water and prevent further migration of the contaminates.
- o Excavation - Extent of coal tar is being excavated and stockpiled on-site.
- o Disposal - Upon regulatory approval, excavated material will be land disposed in a hazardous waste landfill.
- o Regulatory Involvement - Will require IEPA permission to land dispose hazardous waste.

5.0 SUMMARY OF GROUND WATER MONITORING

Monitoring well locations are shown in Figure 3. Dames & Moore sampled groundwater water from two sources: the shallow aquifer (approx. 2 to 20 feet below ground level) and the bedrock aquifer (approx. 20 to 25 feet below ground level).

5.01 Shallow Aquifer (2 to 20 feet below ground level)

Cyanide
Water samples from the shallow aquifer show cyanide to be present in following concentrations:

Location	Water Quality Standard	Result
MW-2	0.025 mg/L[1]	0.398 mg/L
MW-5		0.137
MW-6		1.55
MW-7		0.176

1 Illinois General Use Water Quality Standards, 34 Ill. Admin. Code 302.201.

Phenols
Phenols have been found (11.8 mg/L) in one shallow aquifer monitoring well (MW-2) at a level which exceeds the Illinois General Use Water Quality Standard (0.1 mg/L).

Volatile Organic Compounds
- o High concentrations of VOCs (2766 ppb) have been detected in MW-2.
- o Benzene has been found at a concentration of 1670 ppb. The maximum contaminant level for benzene is 5 ppb (Environmental Protection Agency National Primary Drinking Water Regulations, 40 CFR 141.61).
- o Detectable concentrations of VOCs have been found in MW-6.

Base/Neutral Organics
- o Base/neutral organics have been found in MW-2 at a concentration of 1144 ppb.
- o Detectable concentrations of base/neutral organics have been found in MW-6.
- o No water quality standard for base/neutrals have been identified. However, Dames & Moore has reported that both wells exceed the Illinois Baseline Cleanup Objectives for base/neutral organics.

5.02 BEDROCK AQUIFER (Depths between 20 and 25 feet from the surface)

o Detectable concentrations of cyanide, phenols, VOCs, and base/neutral organics have been found in MW-A.

o Detectable concentrations of phenols have been found in MW-B.

o A samples from MW-B has exceeded the General Use Water Quality Standard for cyanide (a concentration of 0.051 mg/L was found). MW-B is located in the vicinity of MW-7 (MW-7, a nearby shallow well, had a cyanide level of 0.176 mg/L).

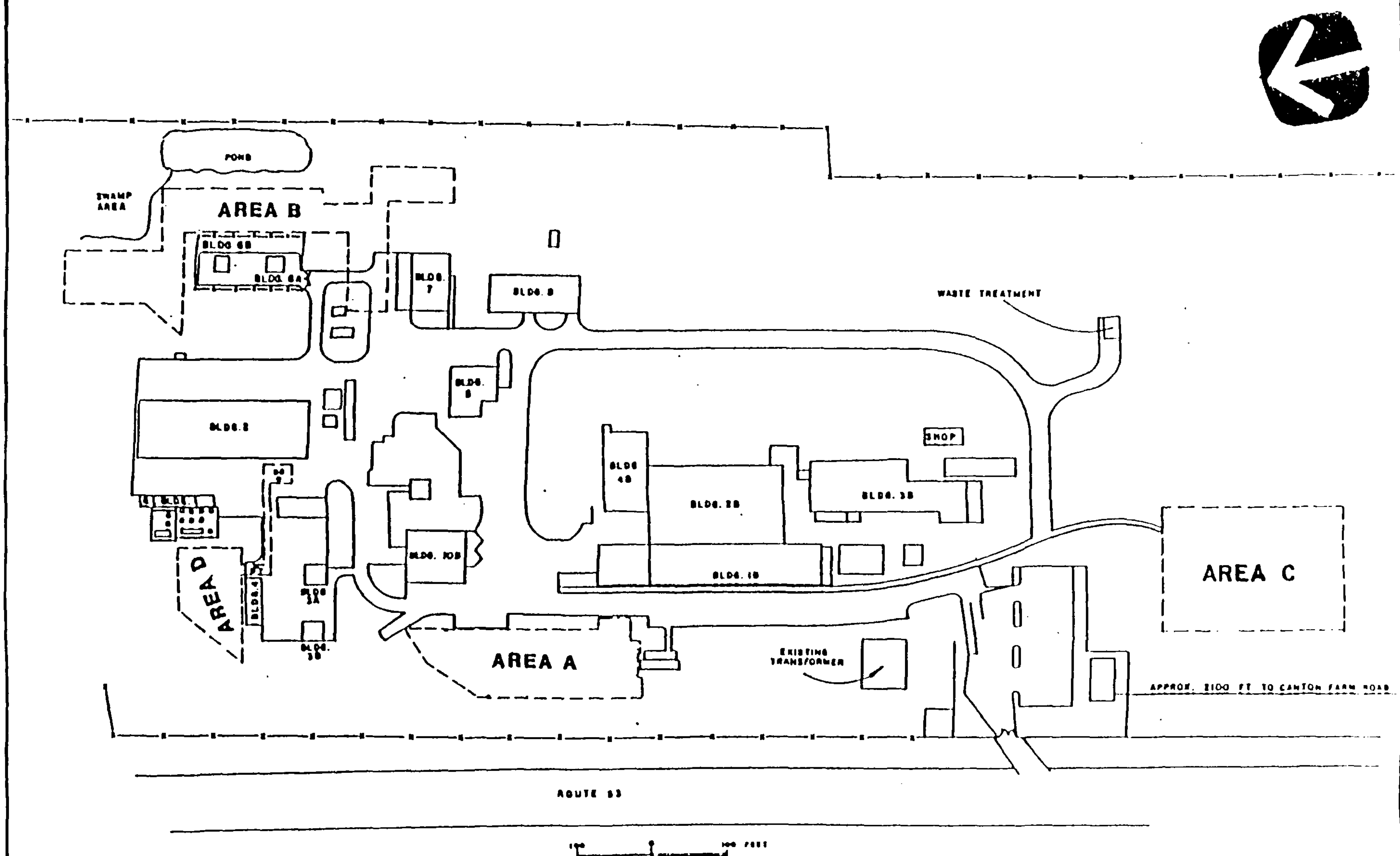
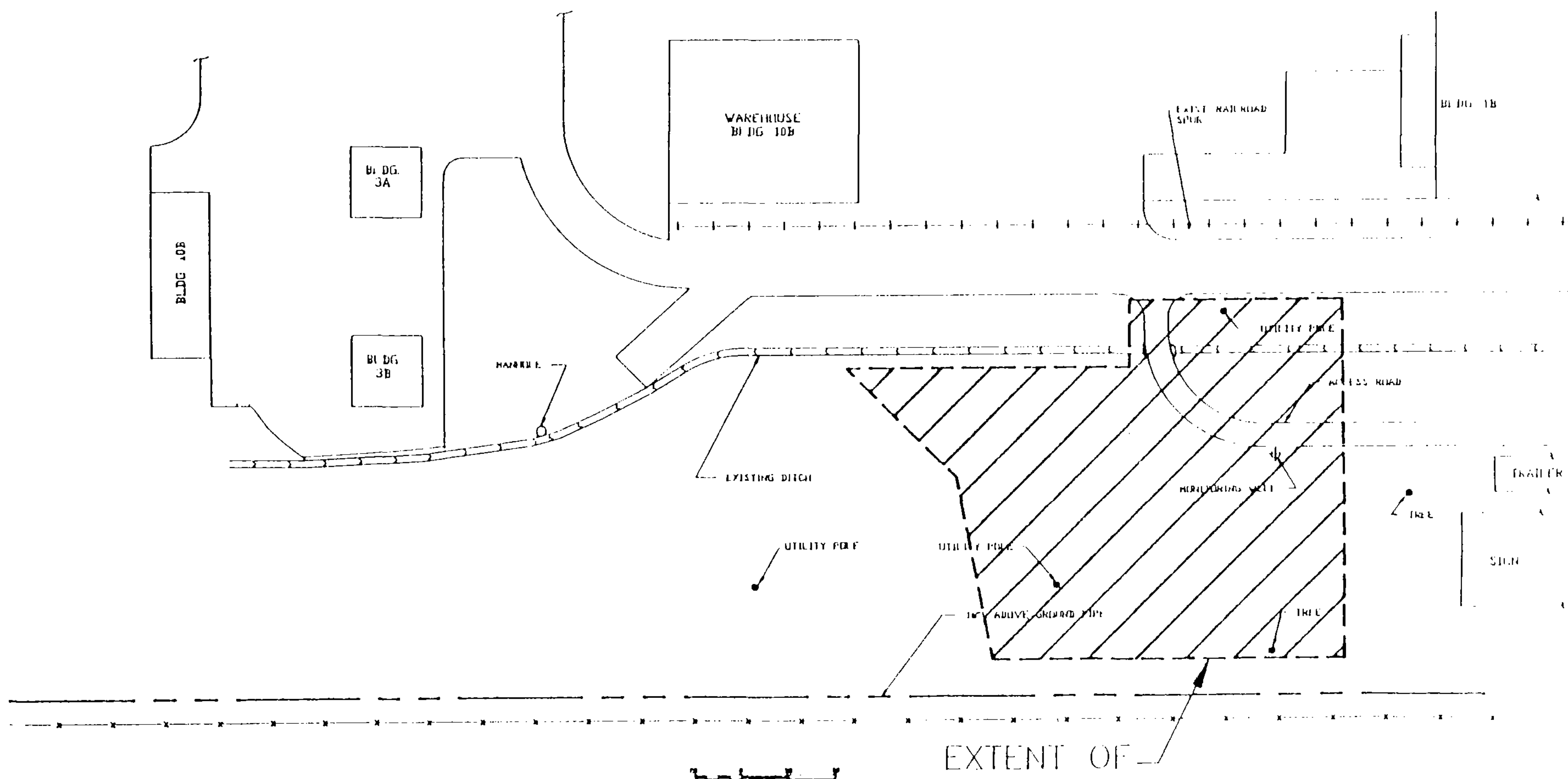


FIGURE 1
SITE LAYOUT
ALCAN-TOYO AMERICA, INC.
LOCKPORT, ILLINOIS



OBRIEN & GERE

FIGURE 2

AREA A

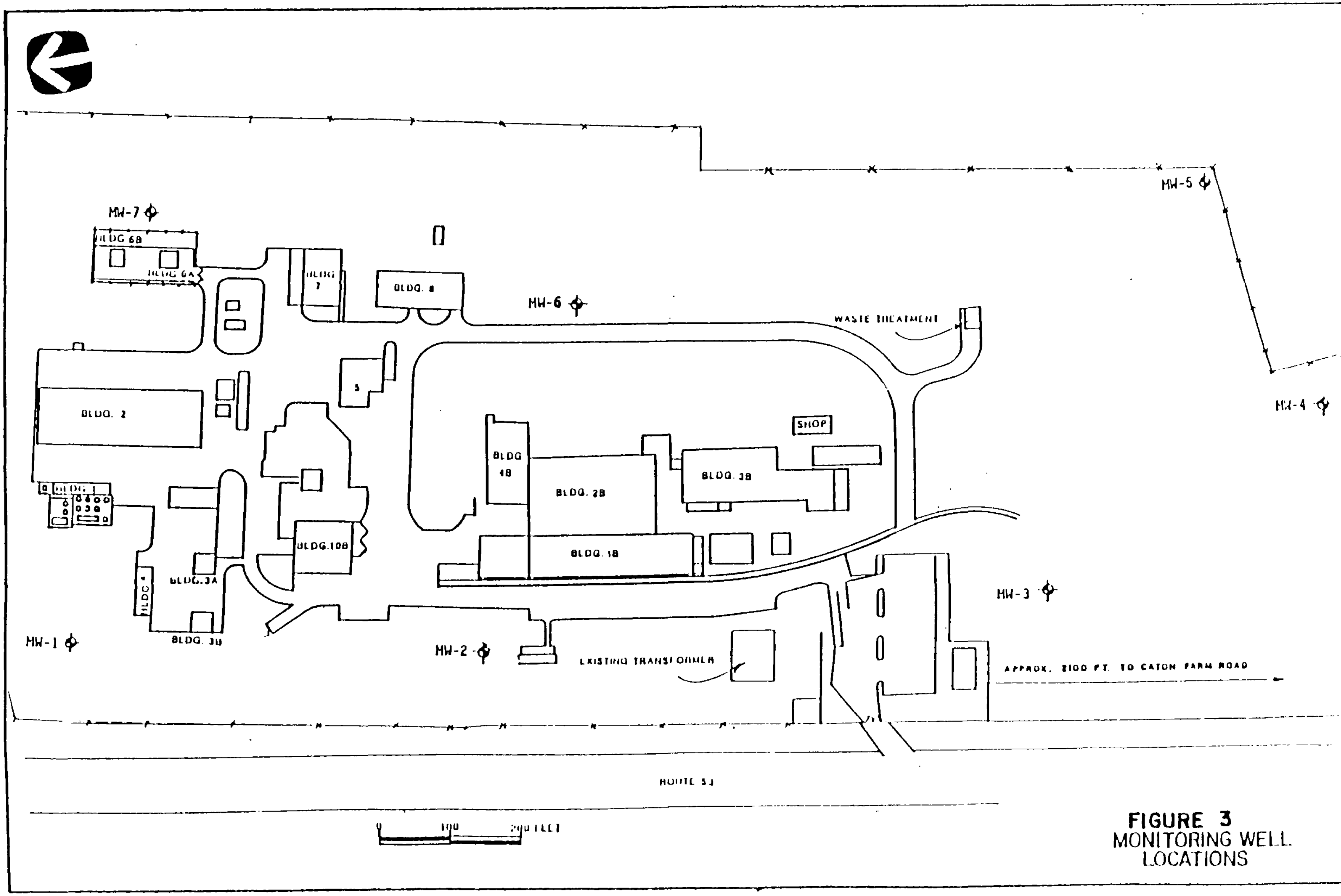


FIGURE 3
MONITORING WELL
LOCATIONS